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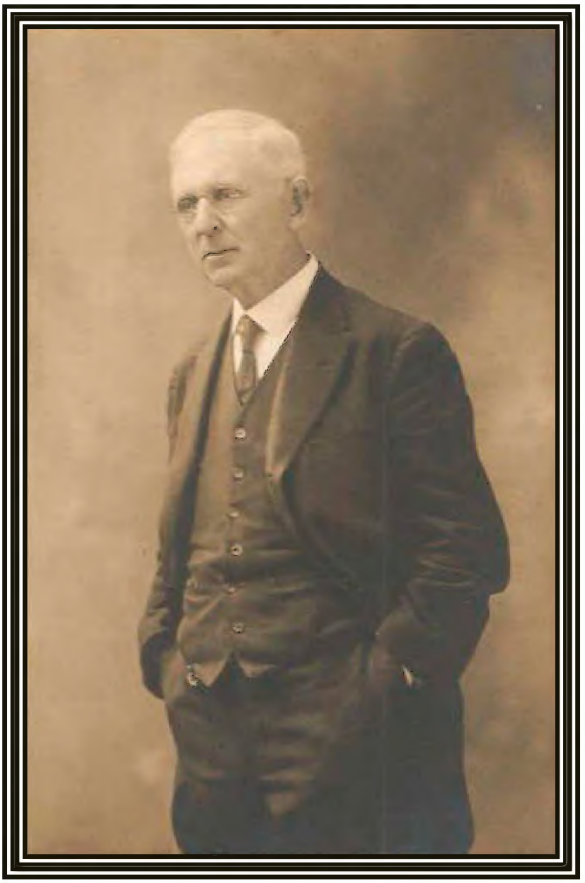
MARYLAND BIRDLIFE

Avian studies in the Mid-Atlantic region



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Cover: Duncan Campbell Lyle, 1917, age 70. Image provided by an anonymous donor who, in 2014, discovered the photo posted on the former Facebook Virginia History website.

Maryland Birdlife 72(1):1

EDITOR'S NOTE

The Spring 2023 issue of *Maryland Birdlife* begins with Don Jewell's historical article about Duncan Campbell Lyle (see cover photo), a former faculty member (46 years) and Headmaster (1889–1893) of McDonogh School in Baltimore County. Lyle chronicled the birdlife on campus and inspired an interest of birds in his students.

The Maryland Biodiversity Project began fall migration counts at Turkey Point (Cecil County) in 2021 and at Dans Rock (Allegany County) in 2022. Daniel Irons highlights the 2021 count and Jonathan Irons highlights the 2022 count at Turkey Point; Carl Engstrom presents the 2022 count at Dans Rock.

Marilyn Veek summarizes the 2022 Maryland May Count and Chuck Stirrat recaps the 2023 Maryland Fall Count.

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Maryland Birdlife 72(1):2–14

Early Birding at McDonogh School: The book, the boys, and the birds

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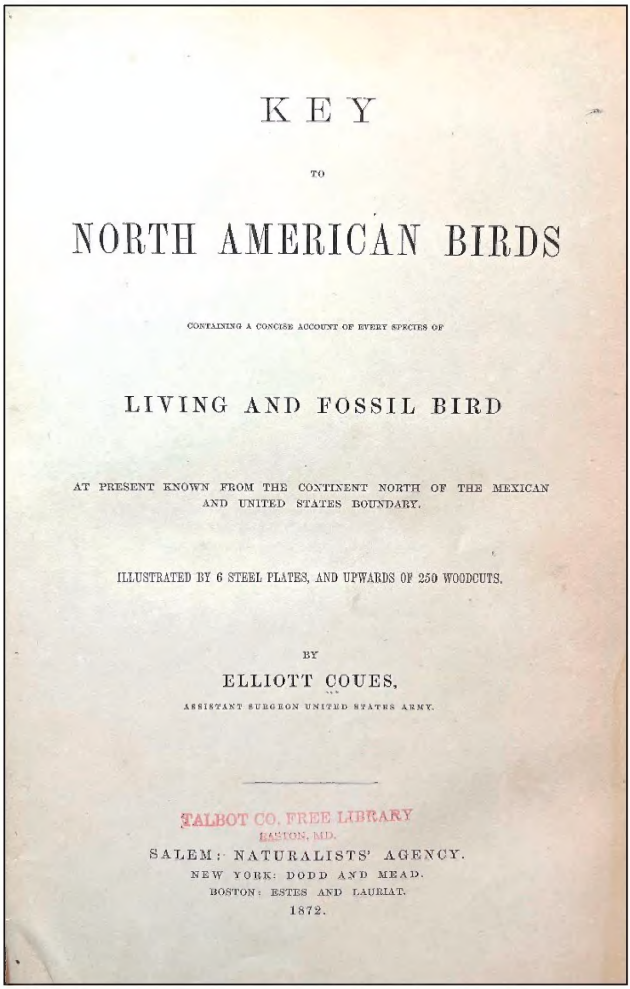
Abstract: In 1878, Duncan Campbell Lyle, an instructor at McDonogh School in Baltimore County, Maryland, purchased a first edition copy of Elliott Coues' 1872 *Key to North American Birds*. Shortly thereafter he began recording the birds he observed (shot most likely) along with the dates. Sometime in 1879, he started including sightings by students at the school. They would bring birds for him to identify. In Coues' book, next to the species description, Lyle would list the name of the student who found the bird, along with the date. There were 272 such entries chronicling 141 species. This information is invaluable as a record of the species frequenting that area in the late 1800s as well as providing a look at the way students of McDonogh School became interested in ornithology.

Referred to in later life by his admiring students as "the old man," Duncan Campbell Lyle served on the faculty of McDonogh School near Baltimore, Maryland for 46 years. He taught Mathematics and German and served for a short period as headmaster, replacing Colonel William Allen in 1889 (Burgess and Smoot 1973). Allen had been instrumental in hiring Lyle. One might say that the two had served under General Robert E. Lee in war and in peace. Lyle was a 17-year-old student himself when he answered the call to fight for the South. Lieutenant Lyle's military career was short. The war ended and he returned to finish his degree at Washington College (now Washington and Lee University in Lexington, Virginia), becoming an Assistant Professor of Mathematics there. William Allen was also on the faculty. Lee was college president.

Lyle was hardly "old" when he arrived at McDonogh at the age of twenty-five in 1872. Coincidentally, that was the same year Elliott Coues published his *Key to North American Birds* (Figure 1). The book's full title went on to read "*Containing a Concise Account of Every Species of Living and Fossil Bird at Present Known from the Continent North of the Mexican and United States Boundary*" (Coues 1872). (Coues was never known for his modesty.)

Lyle purchased Coues' book on March 9, 1878. He wrote the date on a front flyleaf along with his name, "D. C. Lyle." (Figure 2). Shortly after this, Lyle began recording the birds he encountered along with the dates, writing directly



KEY

TO

NORTH AMERICAN BIRDS

CONTAINING A CONCISE ACCOUNT OF EVERY SPECIES OF

LIVING AND FOSSIL BIRD

AT PRESENT KNOWN FROM THE CONTINENT NORTH OF THE MEXICAN AND UNITED STATES BOUNDARY.

ILLUSTRATED BY 6 STEEL PLATES, AND UPWARDS OF 250 WOODCUTS.

BY

ELLIOTT COUES,

ASSISTANT SURGEON UNITED STATES ARMY.

TALBOT CO. FREE LIBRARY
EASTON, MD.

SALEM: NATURALISTS' AGENCY.
NEW YORK: DODD AND MEAD.
BOSTON: ESTES AND LAURIAT.
1872.

Figure 1. Title page of Elliott Coues' *Key to North American Birds*.

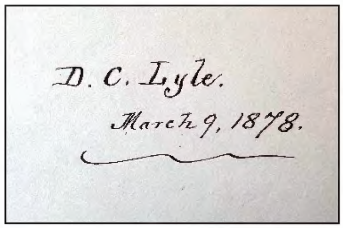


Figure 2. Duncan Campbell Lyle's signature and purchase date on a front flyleaf of Coues' *Key to North American Birds*.

in the book (see Appendix). All of the entries for 1878, and there are 127 of them, are credited to Lyle himself. Later, however, other names begin to appear next to the sightings. Sightings may not be the right word to use though. Most of the birds had been shot.

An article in the January 19, 1884 edition of the McDonogh student newsletter, *The Week*, explains what happened:

"Birds at McDonogh"

> "Some of the boys in the printing room have lately been printing the names of the birds that are common around here, intending to sell them for labels to put on egg-boxes. This suggested to us the idea of printing a list of the birds we meet with on the place and in the surrounding country. For some time after Mr. Lyle got the fine work by Dr. Coues, the *Key to North America Birds*, he shot almost every bird he met and identified it. Then the boys commenced bringing in the birds they killed, to have Mr. Lyle help them find the names. Every time Mr. Lyle, Mr. Johnson, or Mr. Gantt or one of the boys found a new bird, a mark was set down, together with the date, right opposite the description of the bird in the *Key*. We have in this manner gotten a pretty accurate list of the birds to be met with on the place."

Some student names appear more regularly than others. John David Kearsey (listed in the book as Kersey.) was responsible for 15 of the entries. Lyle was obviously quite impressed by the boy's prowess as a hunter. Next to a Red-tailed Hawk appears "March 19, 1882. Kersey killed him with a slingshot."

With eight birds to his credit, John Lawrence Schutz (listed as Schutz) came in second. An article entitled "Shooting" that appeared in Volume 1, Number 37 of *The Week* claimed that "Schutz kills most of the birds." He also teamed up with another student named David Church Fairbanks (Banks for short, and not to be confused with a student named Fairbank) to collect almost 300 bird eggs from around the campus. Schutz did appear to have a genuine appreciation of birds though. In another article from *The Week* ("Birds and Beasts"), he wrote: "As I went to breakfast on the morning of the twenty-second I saw a robin in the elm tree in front of the old house. The ground was covered with snow, but he whistled cheerfully." One of his classmates described Fairbanks as being "fonder of birds and woods than of books." He and Schutz were also curious about bird behavior. On one occasion, they moved some sparrows (species not identified) into the nest of an Eastern Bluebird to see what would happen. The bluebird evidently raised them (Lanier and Learny 1883–1884).

There were no students by the name of Cobb at McDonogh in the 1880s. The fourteen birds credited to that name had nothing to do with the school. Rather, the reference was to Cobb's Island in Virginia. Nathan Cobb had bought the island (originally known as Great Sand Shoal) for $150.00 in 1839. Cobb thought the island might be a source of marketable salt. He later discovered that there was money to be made in the wrecking business. He was not only able to make a tidy profit by salvaging wrecked ships content, but also managed to save the lives of many sailors. As such, he and his sons were the precursors to the life-saving station established on the island in the 1870s (Kellam 1974).

Cobb and his family also discovered that they could make money by shooting the many birds that came to the island. Ducks sold for 50 cents each. Word soon got out that the island was a paradise for hunters and the Cobbs decided to cash in on their reputation by building a hotel (Kagawa and Kellam 2003).

When D.C. Lyle visited the island, Cobb's was pretty much the premiere resort on Virginia's Eastern Shore. The Barrier Islands Center in Machipongo, Virginia preserves much of the area's history, including the register from the Cobb's Island Hotel. Lyle signed it on Friday, July 23, 1880 and again on July 29, 1881. Notes in the Coues book make no mention of birds from Cobb's Island for that first year. In 1881, however, there are 14 listed. Most of these were species that might be expected, including shorebirds, gulls, and terns. Grasshopper Sparrow stands out though. (Considering the lack of habit on the island, this sighting seems a bit tentative. However, Lyle did have the advantage of identifying birds in the hand and not at some distance through a scope.) All of Lyle's entries were given dates of either July 29, August 1, or August 2. It is interesting that nothing happened on the Saturday or Sunday in between. Perhaps D.C. Lyle did a little fishing or made certain to observe the Sabbath. There are no records that he ever returned. Storms made the island's success rather precarious. Most of the family had left the island by 1896 when a hurricane destroyed the hotel.

In later years, the Island continued to attract those interested in birds and the Cobb family managed to stay involved. When ornithologist Olin Sewall Pettingill, Jr. decided it would be a great place to bring his newlywed bride on their honeymoon in July 1933 he was greeted by George Cobb, the Audubon warden there (Pettingill 1961).

It would at first seem that none of the birds collected were preserved as skins. There are no surviving specimens at McDonogh School. The fact that there is no mention of taxidermy in the student newsletter also tends to support this. If Lyle had intended to do so, he could have consulted another Coues book. This was *Field Ornithology. Comprising a Manual of Instruction for Procuring,*

Preparing and Preserving Birds, and a Check List of North American Birds (Coues 1874).

There may possibly be some evidence for preserving at least one specimen. Next to the Red-tailed Hawk on page 216 (Figure 3), Lyle made the following note: "Jan. 3, 82. ♂ Young, and without any red on tail. It is doubtless a male and a small one at that. E. Coues."" [Note: A quotation mark occurred only at the end of the actual note; none before.] The fact that Coues' name was underlined seems significant. This might suggest that Coues had actually seen the bird in question.

Could Lyle have met Coues and shown him the bird? The ornithologist's ties to Baltimore go back at least to when he was stationed as Assistant Surgeon at Fort McHenry from November 1870 to October 1872. He later died in the city at Johns Hopkins Hospital on Christmas day 1899. In 1882, when Lyle made his note, Coues was living in Washington, D.C. and lecturing to various groups in the area. Perhaps Lyle attended one of these lectures carrying a mounted hawk with him (Cutright and Brodhead 1981).

There is also a suspicious entry on page 287 (Figure 4). Next to the description of the Blue-winged Teal, Lyle wrote "Dec. 2. '72 C". Was this an error? Did he just remember shooting the bird back then, or had he preserved the bird and identified it at a later date?

In all, there are 272 bird sightings penciled in on the pages of the book. Most occurred between the years 1878 and 1882, with a few scattered about in 1883, 1885, 1886, 1888, 1889, and even one Common Loon in 1910. There are 141 different species annotated by Lyle. Species include 6 hawks and falcons, 4 owls, 7 woodpeckers, 5 flycatchers, 5 vireos, 6 thrushes, 11 sparrows, and 25 warblers, just to name a few.

It is saddening to see extinct birds like the Passenger Pigeon on the list. However, even more frustrating is the fact that the boys of McDonogh School were able to find so many species nesting or migrating through the property during the 1880s. The numbers of warblers in particular would probably be impossible to duplicate there today.

What is curious are the species not recorded. European Starling is not listed of course. That one hadn't been released yet in the United States. Northern Mockingbird does not appear anywhere though. One would have expected this to be a fairly common species around Baltimore at that time.

Then, as now, those who graduated followed different paths in life. John David Kearsey became a Master Plumber. David Church Fairbanks worked as a real estate agent and served on the Pennsylvania Legislature. His school chum, John

Lawrence Schutz actually did work in the sciences, first as Assistant Curator of the Biological Laboratory of The Johns Hopkins University and then as Curator of the Pathological Laboratory at Johns Hopkins Hospital (Burgess and Smoot 1973).

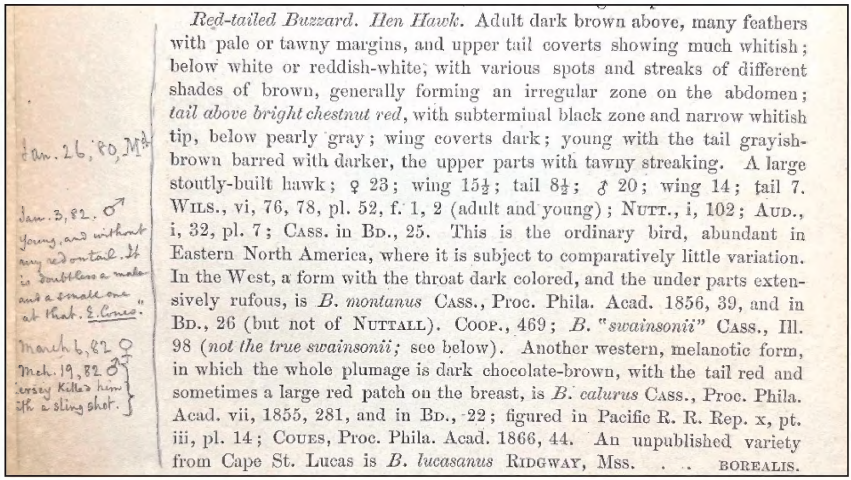

Jan. 26, 80, M.
Jan. 3, 82. ♂ Young, and without any red on tail. It is doubtless a male and a small one at that. E. Coues.
March 6, 82 ♀
March 19, 82 ♂ Jersey Killed him with a sling shot.
Red-tailed Buzzard. Hen Hawk. Adult dark brown above, many feathers with pale or tawny margins, and upper tail coverts showing much whitish; below white or reddish-white, with various spots and streaks of different shades of brown, generally forming an irregular zone on the abdomen; tail above bright chestnut red, with subterminal black zone and narrow whitish tip, below pearly gray; wing coverts dark; young with the tail grayish-brown barred with darker, the upper parts with tawny streaking. A large stoutly-built hawk; ♀ 23; wing 15½; tail 8½; ♂ 20; wing 14; tail 7. WILS., vi, 76, 78, pl. 52, f. 1, 2 (adult and young); NUTT., i, 102; AUD., i, 32, pl. 7; CASS. in BD., 25. This is the ordinary bird, abundant in Eastern North America, where it is subject to comparatively little variation. In the West, a form with the throat dark colored, and the under parts extensively rufous, is B. montanus CASS., Proc. Phila. Acad. 1856, 39, and in BD., 26 (but not of NUTTALL). COOP., 469; B. "swainsonii" CASS., Ill. 98 (not the true swainsonii; see below). Another western, melanotic form, in which the whole plumage is dark chocolate-brown, with the tail red and sometimes a large red patch on the breast, is B. calurus CASS., Proc. Phila. Acad. vii, 1855, 281, and in BD., 22; figured in Pacific R. R. Rep. x, pt. iii, pl. 14; COUES, Proc. Phila. Acad. 1866, 44. An unpublished variety from Cape St. Lucas is B. lucasanus RIDGWAY, MSS. . . . BOREALIS.

Figure 3. Lyle's annotation next to Red-tailed Buzzard, Hen Hawk (Red-tailed Hawk) on page 216 of Coues' *Key to North American Birds*.

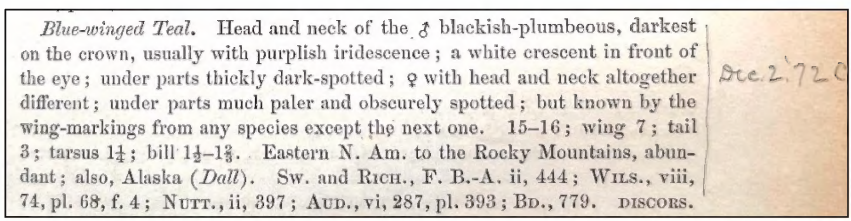

Blue-winged Teal. Head and neck of the ♂ blackish-plumbeous, darkest on the crown, usually with purplish iridescence; a white crescent in front of the eye; under parts thickly dark-spotted; ♀ with head and neck altogether different; under parts much paler and obscurely spotted; but known by the wing-markings from any species except the next one. 15–16; wing 7; tail 3; tarsus 1¼; bill 1⅛–1⅜. Eastern N. Am. to the Rocky Mountains, abundant; also, Alaska (Dall). SW. and RICH., F. B.-A. ii, 444; WILS., viii, 74, pl. 68, f. 4; NUTT., ii, 397; AUD., vi, 287, pl. 393; BD., 779. DISCORS.
Dec. 2. 72 C

Figure 4. Lyle's annotation next to Blue-winged Teal on page 287 of Coues' *Key to North American Birds*.

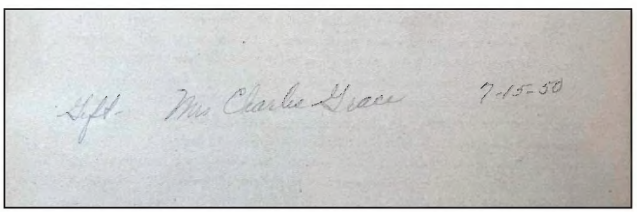


Figure 5. Mrs. Charles Grace's note on the rear of the title page of Coues' *Key to North American Birds* documenting the presentation of Lyle's copy of Coues' book as a gift to the Talbot County Free Library on July 15, 1950.

Most of McDonogh's curriculum was intended to prepare students for success in the world. What they learned about birds was mostly the result of D.C. Lyle's sharing of Elliott Coues' *Key to North American Birds*. This was in the true spirit of the words of the school's founder, John McDonogh, encouraging students to "Never think any matter so trivial as not to deserve notice."

Duncan Campbell Lyle lived to be 90 years old and is buried in the McDonogh Cemetery. At some point he turned Coues' book over to Charles H. Grace, another instructor at the school. On July 15, 1950, it was presented as a gift to the Talbot County Free Library (note the library stamp in Figure 1) in Easton, Maryland by Mrs. Charles Grace (Figure 5). Discarded, it eventually ended up at the Unicorn Bookshop in Trappe, Maryland where this author found it.

ACKNOWLEDGMENTS

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APPENDIX

A Chronology of Birds Recorded by Duncan Campbell Lyle from 1872 through 1910 in a Copy of *Key to North American Birds* (Coues 1872)

The majority of the recorded birds were from McDonogh School, Owing Mills, Maryland except for 29 July–2 August 1881 which were from Cobb's Island, Virginia. (♂ = male, ♀ = female, U = unknown, [ ] = author note.) Some of the sightings and dates listed below may not correspond to what is presently known about certain species. We only have D.C. Lyle's word for them. There is no way to fact-check the data. To his credit though, identifications were made from birds in hand, using the most up-to-date guide available at the time.

Year	Month	Day	Species	Sex	Lyle's additional written comments
'72	Dec	2	Blue-winged Teal	U	C
1878	Mar	11	White-breasted Nuthatch	U	
		12	Blue Jay	U	
		13	Tufted Titmouse	U	
		14	Red-headed Woodpecker	U	
		15	Downy Woodpecker	U	
			American Robin	U	
		19	Eastern Bluebird	♂	
			Eastern Phoebe	U	
		20	Vesper Sparrow	U	
		23	Song Sparrow	U	
		25	Golden-crowned Kinglet	♂	
			Golden-crowned Kinglet	♀	
		26	Tufted Titmouse	U	
			Fox Sparrow	U	
			Vesper Sparrow	U	
		27	American Crow	U	
			Black-capped Chickadee	U	
		28	Northern Cardinal	♀	
		29	Red-bellied Woodpecker	U	
			Dark-eyed Junco	U	
	Apr	1	Wilson's Snipe	U	
		3	Killdeer	U	
			Northern Flicker	U	
			Eastern Meadowlark	U	
		9	Eastern Bluebird	♀	
		11	Belted Kingfisher	♀	
		12	Ruby-crowned Kinglet	U	
		13	Eastern Phoebe	U	
			Downy Woodpecker	♂	
			Yellow-bellied Sapsucker	U	
			Ruby-crowned Kinglet	U	
			Blue-gray Gnatcatcher	U	
			Swainson's Thrush	U	
			Field Sparrow	U	

Year	Month	Day	Species	Sex	Lyle's additional written comments
		15	Blue Jay	U	
			Black-capped Chickadee	U	
			Rusty Blackbird	♂	
		18	Belted Kingfisher	♀	
			Northern Cardinal	♂	
		24	House Wren	U	
			American Goldfinch	♀	
			Swamp Sparrow	U	
		25	Gray Catbird	U	
			Wood Thrush	U	
			Eastern Towhee	♂	
			Rusty Blackbird	♂	
			Black-and-white Warbler	U	
			Common Yellowthroat	U	
		26	Solitary Sandpiper	U	
			American Goldfinch	♂	
		27	Eastern Screech-Owl	U	
			Solitary Sandpiper	U	bill blackish, legs pinkish=brown
			Tufted Titmouse	U	
			White-throated Sparrow	♂	
			Common Yellowthroat	♂	
		30	Yellow-rumped Warbler	♂	
			Yellow-rumped Warbler	♀	
			Indigo Bunting	♂	
	May	1	American Pipit	U	
			Great Crested Flycatcher	U	
			Yellow-throated Vireo	U	
			Red-eyed Vireo	U	
			White-throated Sparrow	♂	
			Eastern Towhee	♀	
			Ovenbird	U	
			Black-and-white Warbler	U	
			Scarlet Tanager	♂	
		3	Chimney Swift	U	
		4	Barn Swallow	U	
			American Redstart	♂	
			American Redstart	♀	
			Yellow Warbler	♂	
		5	Yellow Warbler	♂	
		6	Eastern Kingbird	U	
		7	Black-throated Blue Warbler	♂	
			Indigo Bunting	♂	
		9	Black-billed Cuckoo	U	
		11	Yellow-billed Cuckoo	U	
			Bobolink	♂	
		13	Common Nighthawk	♂	
			House Sparrow	♂	
			Red-eyed Vireo	U	
			Swainson's Thrush	U	
			Common Yellowthroat	♂	

Year	Month	Day	Species	Sex	Lyle's additional written comments
		14	Chipping Sparrow	U	
		15	Eastern Wood-Pewee	U	
			Barn Swallow	U	
			Cliff Swallow	U	
			Ovenbird	U	
			Northern Parula	♀	
			Blackburnian Warbler	♂	
		18	Eastern Screech-Owl	U	
			Veery	U	
			American Redstart	♂	
			Black-throated Blue Warbler	♂	
		19	Brown Thrasher	U	
		20	Veery	U	
			Wood Thrush	U	
			Blackpoll Warbler	♂	
			Scarlet Tanager	♀	
		21	Green Heron	U	
			Spotted Sandpiper	U	
			Eastern Wood-Pewee	U	
			Northern Waterthrush	U	
			American Redstart	♀	
			Magnolia Warbler	U	
			Black-throated Blue Warbler	♂	
			Wilson's Warbler	U	
		22	Purple Martin	U	
			Magnolia Warbler	U	
		23	Spotted Sandpiper	U	
			Carolina Wren	U	
			American Goldfinch	♂	
			American Goldfinch	♀	
			Northern Waterthrush	U	
			Common Yellowthroat	♀	
			Pine Warbler	U	
		25	Cedar Waxwing	U	
		28	Great Crested Flycatcher	U	
			Carolina Wren	U	
			Dickcissel	♂	
		30	Baltimore Oriole	♂	
			Indigo Bunting	♀	
	Jul	3	American Woodcock	U	
	Aug	24	Ruby-throated Hummingbird	♀	
	Nov	6	Red-shouldered Hawk	U	
		9	Red-bellied Woodpecker	♂	
		10	Passenger Pigeon	U	
1879	Jan	30	American Kestrel	♂	
	Feb	7	Horned Lark	U	
	Mar	6	Mourning Dove	U	
			Fox Sparrow	U	
		11	Tufted Titmouse	U	
		13	Passenger Pigeon	U	

Year	Month	Day	Species	Sex	Lyle's additional written comments
		15	American Pipit	U	
			Red-winged Blackbird	♀	
	Apr	8	Red-winged Blackbird	♂	
		14	Belted Kingfisher	♂	
	May	2	Common Yellowthroat	♂	
		3	Carolina Wren	U	
		7	Purple Finch	♂	
		8	Acadian Flycatcher	U	? [*after date*]
		10	Great Crested Flycatcher	U	
			White-breasted Nuthatch	U	
		13	Eastern Wood-Pewee	U	
			Cerulean Warbler	U	
		14	Northern Parula	♂	
			Black-throated Green Warbler	U	
		15	Yellow-billed Cuckoo	U	
			Barn Swallow	U	
			Brown Thrasher	U	
			White-throated Sparrow	♀	
		16	House Wren	U	
			Cerulean Warbler	U	
			Black-throated Blue Warbler	♀	
		20	Common Grackle	♂	
		24	Song Sparrow	U	
		25	Chipping Sparrow	U	
		26	Purple Martin	U	
			Cliff Swallow	U	
			Grasshopper Sparrow	U	
			Blue Grosbeak	U	
		30	Indigo Bunting	♀	
	Jun	7	Pileated Woodpecker	U	in Va.
		13	Yellow-breasted Chat	U	
	Aug	5	Baltimore Oriole	♀	
		21	Savannah Sparrow	U	? [*after date*]
		23	Yellow-throated Vireo	U	
		24	Philadelphia Vireo	U	
		27	Great Blue Heron	U	
		30	Hooded Warbler	U	Kersey
		31	Veery	U	Kersey
	Sep	11	Red-bellied Woodpecker	U	
	Nov	2	Chipping Sparrow	U	
1880	Jan	14	Brown Creeper	U	
			American Pipit	U	
		23	Winter Wren	U	
		26	Red-tailed Hawk	U	Md.
		27	Red-shouldered Hawk	U	Md.
	Feb	14	Barred Owl	U	
		24	Red-shouldered Hawk	♂	Md.
	Apr	16	Palm Warbler	U	Milburn
	May	8	Yellow Warbler	U	Milburn
		14	White-eyed Vireo	U	Evans

Year	Month	Day	Species	Sex	Lyle's additional written comments
		15	Ovenbird	U	G. Job
		16	Yellow-throated Vireo	U	Mil & Sch
			Canada Warbler	U	Kersey & Chenowith
		18	Great Crested Flycatcher	U	
			American Redstart	♂	Kersey
			Bobolink	♀	
		19	American Redstart	♀	Wilkinson
		20	Spotted Sandpiper	U	
			Killdeer	U	All had conspicuous orange eyelids
		21	Northern Rough-winged Swallow	♀	
		22	Eastern Wood-Pewee	U	
	Jul	9	Blue Grosbeak	♀	
		13	Pine Warbler	U	Kersey
		14	Black-and-white Warbler	U	Anschutz
		16	Grasshopper Sparrow	U	Dorsey
			Louisiana Waterthrush	U	Dorsey
		29	White-eyed Vireo	U	Kersey
	Aug	21	Warbling Vireo	U	Dorsey
		26	Orchard Oriole	U	
	Sep	1	Veery	U	Geo. Jo
		8	Hairy Woodpecker	U	
		24	American Kestrel	♀	
		25	Blue-winged Warbler	U	Geo. Jobson
	Oct	15	Ruby-crowned Kinglet	U	G. Jobson
			White-throated Sparrow	U	G. Jobson
	Nov	4	Brown Creeper	U	Chenowith
		12	Northern Bobwhite	U	
			Sharp-shinned Hawk	U	
		13	Northern Saw-whet Owl	U	G.
1881	Apr	13	American Bittern	U	
		18	Sharp-shinned Hawk	♂	
		24	White-throated Sparrow	U	Bourne
		24	Black-throated Green Warbler	♂	Bourne
	May	7	Cerulean Warbler	U	Kersey
			Black-throated Blue Warbler	♀	Kersey
			Yellow-rumped Warbler	U	Kersey
		27	Brown-headed Cowbird	♂	Kersey
	Jun	24	Yellow-throated Vireo	U	Burg
	Jul	29	Whimbrel	U	Cobb's
			Lesser Yellowlegs	U	Cobb's
			Common Tern	U	Cobb's
			Black Skimmer	U	Cobb's
			Clapper Rail	U	Cobb's
	Aug	1	Willet	U	Cobb's
			Semipalmated Sandpiper	U	Cobb's
			Laughing Gull	U	Cobb's
			Wilson's Plover	U	Cobb's
		2	Least Tern	U	Cobb's
			Snowy Egret	U	Cobb's
			Semipalmated Plover	U	Cobb's

Year	Month	Day	Species	Sex	Lyle's additional written comments
			Semipalmated Sandpiper	U	Cobb's
			Grasshopper Sparrow	U	Cobb's
	Sep	16	Chestnut-sided Warbler	U	Schutz
	Oct	7	Yellow-rumped Warbler	U	Kersey
		9	Ruby-crowned Kinglet	U	Ansch & Kersey
			Swainson's Thrush	U	Kersey
			Pine Warbler	U	Kersey
		16	Yellow-bellied Sapsucker	U	Ansch
	Nov	3	Sharp-shinned Hawk	U	Gantt
1882	Jan	3	Red-tailed Hawk	♂	Young, and without any red on tail. It is doubtless a male and a small one at that. E. Coues"
	Mar	6	Red-tailed Hawk	♀	
		18	Brown-headed Cowbird	♂	
		19	Red-tailed Hawk	♂	Kersey killed him with a sling shot.
	Apr	23	Palm Warbler	♂	Schutz
	May	7	Northern Parula	U	Schutz
		11	Chestnut-sided Warbler	♂	Schutz
		12	Magnolia Warbler	U	Schutz
			Blackburnian Warbler	U	Schutz
			Black-throated Blue Warbler	U	Schutz
		13	Swainson's Thrush	U	Anschutz
		14	Nashville Warbler	U	Duvall
			Kentucky Warbler	U	Nason
		16	Orchard Oriole	♂	J.J.
1883	Apr	25	Broad-winged Hawk	♂	J.J.
		28	Black-throated Green Warbler	♂	Fairbank
		30	Hermit Thrush	U	J.J. jr.
	Sep	25	Sora	U	Young one. Evans caught it in cornfield.
1885	Sep	12	Broad-winged Hawk	U	
1886	Nov	26	Short-eared Owl	U	H.L. Gantt
	Dec	21	Northern Harrier	U	C.D. Lanier
1888	Jan	13	Northern Saw-whet Owl	U	Gilligan
	Feb	12	Red Crossbill	♀	M. Jones & Placide
	Oct	27	Wood Duck	U	Lanier
1889	Mar	2	Barred Owl	U	Sparks
	May	7	Broad-winged Hawk	U	D.J.H., H.C.B.
1910	May	1	Common Loon	U	One caught in water in Painters Meadow.
U	U	U	Ruffed Grouse	U	Gantt

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Turkey Point Fall Migration Count: 2021 Season Report

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Abstract: Each year, millions of birds migrate through the eastern United States between breeding grounds in North America and wintering grounds in Central and South America. Bird migration is perhaps the clearest and most readily observable window into environmental and regional biodiversity health. Migratory birds are affected by environmental changes and by specific challenges at each stage of their migrations. To document bird populations on their southbound migration through the state, the Maryland Biodiversity Project conducted a fall morning flight bird count at Turkey Point, the southernmost point of the Elk Neck Peninsula in Cecil County, Maryland. The count was held from 1 August to 15 November 2021, using the same dates and protocols as the Cape May Bird Observatory morning flight count. The Turkey Point count was the first inland morning flight count for the Mid-Atlantic and the first morning flight count for Maryland and the Chesapeake Bay. The count provides valuable baseline data offering insights into regional bird movement and the nature of their migrations (e.g., relative abundance, timing, local daily weather impacts). The value is compounded when compared to the results of the Cape May Bird Observatory count highlighting differences in species diversity and abundance between inland and coastal locations. During the 2021 season, the Turkey Point Bird Count documented 199,317 individuals of 194 species in southbound migration.

Fall 2021 marked the first year of the Maryland Biodiversity Project (MBP) Turkey Point Fall Migration Count. This exciting new project aims to document the abundance, diversity, and migratory behavior of southbound migrants along the upper Chesapeake Bay. While the count's primary focus is the morning flight of land birds over Turkey Point, special efforts were made to count all species, including waterbirds, moving down the Bay.

Over the years Turkey Point has gained a reputation as one of the premier locations to witness fall migration in Maryland. During mornings with ideal conditions, it is not unusual to see over 70 bird species moving past the Point in the first few hours after sunrise. Historically, Turkey Point has been monitored on a semi-regular basis with most historical efforts focused on raptor migration. A volunteer hawk watch was established in 1994 by the Cecil County Bird Club and ran for roughly 15 years, but coverage was variable and focused on raptors. Northern Saw-whet Owl banding was also conducted periodically, including one

fall in 1995 and then from 2009 to 2015. In recent years, local birders have made an effort to cover Turkey Point in the fall during favorable winds to document the number of migrant passerines and came up with impressive results and several notable records (eBird 2022). Despite a history of birding coverage, consistent daily monitoring at Turkey Point has never taken place until now, especially from a morning flight perspective. Not only is this count a first of its kind for Maryland, but for the East Coast as well, considering its inland and Piedmont location and proximity to the Chesapeake Bay.

METHODS

Turkey Point sits at the southern end of the Elk Neck Peninsula in Cecil County, Maryland (Figure 1). Outlined by the Chesapeake Bay to the west and the Elk River to the east, it serves as a natural concentration point or "funnel" for southbound migrants (i.e., passerines and near-passerines during morning flight, and migrating diurnal raptors). Turkey Point itself is primarily wooded, aside from a small clearing at the tip, where the Turkey Point Lighthouse sits atop a 100-foot-high (30-meter-high) bluff overlooking the Chesapeake Bay. Other notable geographic features include the Chesapeake and Delaware Canal (C&D Canal) which juts off from the Elk River and runs east connecting it to the Delaware River; and the Susquehanna Flats, several miles north of Turkey Point, where the Susquehanna River feeds into the top of the Chesapeake Bay.

The count was conducted daily from the field atop the 100-foot-high bluff at the end of Turkey Point. The counter was positioned 100 ft (30 m) southwest of the lighthouse to maximize detections of migrants flying over the Point and down the Bay. The count ran from 1 August through 15 November. Each morning, the count began 15 minutes before sunrise and ran for a minimum of three hours after sunrise. On days with strong migratory movement, the count was extended past the three-hour mark until migration activity ceased. The count was ended early or suspended on days with continuous heavy rain that prevented flights. Migration data were collected and entered in the field using the Dutch software Trektellen (2022b), allowing the live stream of sightings to MBP's count page (Maryland Biodiversity Project 2021) and to the Trektellen website. Birds were detected via both sight and flight call notes and recorded at species level as much as possible; when a species could not be determined, the detection was recorded at the genus or family level. Flight direction, time, and age and sex data (for species with dimorphic plumage) were also recorded with each entry into the database when possible. Daily reports were also filed with Cornell University's eBird application (eBird 2022). In order to maintain coverage throughout the count period, qualified alternate counters covered eight mornings when the lead counter had days off. Qualified alternate counters each had decades of birding experience and were trained in count protocols by the lead counter.

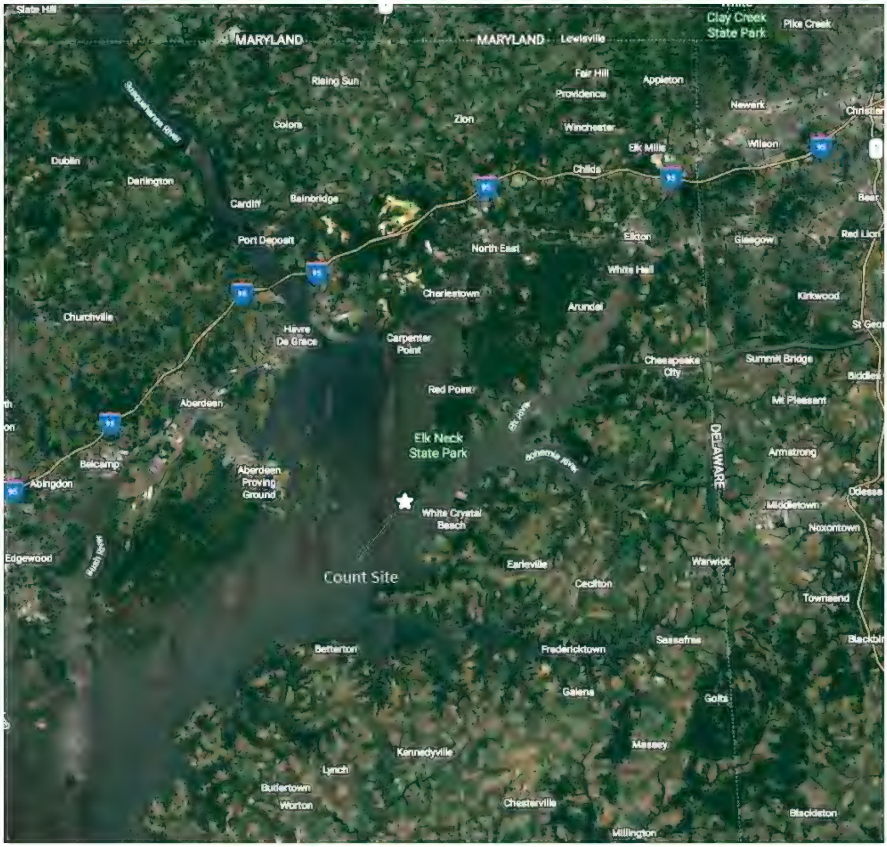

Figure 1. Elk Neck peninsula located in the Northeast corner of Maryland in the northern portion of the Chesapeake Bay. The count site is located on the southern end of the peninsula, or lower end of a funnel, concentrating birds during fall migration.

RESULTS

During the 2021 season 199,317 individuals of 194 species were recorded in active migration from the count site (Table 1). The count was conducted for 107 consecutive days totaling 434 observation hours. The total number of individuals and overall species diversity varied by month, ranging from a high of 119,150 individuals in November to a low in August with 11,699 individuals. September had the highest species diversity with 151 and November had the lowest species count with 103. All numbers in this report derive from totals of all species regardless of flight direction.

Table 1. 2021 Turkey Point Fall Migration Count Results.

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Snow Goose	0	0	1	0	1	1 (7 Oct)	7 Oct	7 Oct
Cackling Goose	0	5	5	5	15	5 (29 Sep)	29 Sep	7 Nov
Canada Goose	0	271	2,342	454	3,067	299 (9 Oct)	3 Sep	15 Nov
Mute Swan	0	11	5	0	16	8 (29 Sep)	19 Sep	25 Oct
Tundra Swan	0	0	0	23	23	20 (2 Nov)	2 Nov	13 Nov
Trumpeter/Tundra Swan	0	0	0	2	2	2 (1 Nov)	1 Nov	1 Nov
Wood Duck	2	4	6	2	14	3 (14 Oct)	2 Aug	4 Nov
Blue-winged Teal	5	22	29	7	63	17 (30 Oct)	24 Aug	4 Nov
Northern Shoveler	0	21	32	1	54	10 (16 Oct)	6 Sep	15 Nov
Gadwall	0	6	26	23	55	12 (30 Oct)	26 Sep	13 Nov
American Wigeon	0	13	433	85	531	139 (19 Oct)	26 Sep	13 Nov
Mallard	1	53	219	177	450	71 (18 Oct)	28 Aug	15 Nov
American Black Duck	0	22	154	114	290	36 (19 Oct)	13 Sep	15 Nov
Northern Pintail	0	41	176	52	269	69 (30 Oct)	26 Sep	15 Nov
Green-winged Teal	0	42	188	5	235	73 (16 Oct)	1 Sep	2 Nov
dabbling duck sp.	0	0	18	0	18	13 (19 Oct)	18 Oct	19 Oct
Canvasback	0	0	0	9	9	9 (11 Nov)	11 Nov	11 Nov
Ring-necked Duck	0	0	93	169	262	54 (11 Nov)	18 Oct	14 Nov
Greater Scaup	0	0	15	17	32	17 (6 Nov)	19 Oct	6 Nov
Lesser Scaup	0	0	15	15	30	11 (23 Oct)	23 Oct	13 Nov
scaup sp.	0	0	20	10	30	12 (25 Oct)	24 Oct	7 Nov
Aythya sp.	0	0	38	47	85	24 (19 Oct)	9 Oct	15 Nov
Surf Scoter	0	0	5	0	5	5 (31 Oct)	31 Oct	31 Oct
White-winged Scoter	0	0	0	1	1	1 (2 Nov)	2 Nov	2 Nov
Surf/Black Scoter	0	0	1	0	1	1 (30 Oct)	30 Oct	30 Oct
Bufflehead	0	0	0	156	156	66 (13 Nov)	2 Nov	15 Nov
Common Goldeneye	0	0	0	7	7	3 (6 Nov)	6 Nov	14 Nov
Hooded Merganser	0	0	0	2	2	2 (5 Nov)	5 Nov	5 Nov
Ruddy Duck	0	0	14	0	14	12 (19 Oct)	18 Oct	30 Oct
duck sp.	0	0	28	2	30	16 (30 Oct)	2 Oct	4 Nov
Pied-billed Grebe	0	2	16	0	18	15 (30 Oct)	2 Sep	31 Oct
Rock Pigeon	0	3	2	3	8	2 (11 Nov)	4 Sep	11 Nov
Mourning Dove	44	16	14	5	79	5 (9 Aug)	1 Aug	15 Nov
Yellow-billed Cuckoo	0	2	0	0	2	1 (2 Sep)	2 Sep	29 Sep
Common Nighthawk	3	0	0	0	3	2 (28 Aug)	27 Aug	28 Aug
Chimney Swift	1,785	1,861	362	1	4,009	417 (10 Aug)	1 Aug	3 Nov
Ruby-throated Hummingbird	86	150	1	0	237	17 (12 Sep)	1 Aug	4 Oct
American Avocet	1	0	0	0	1	1 (23 Aug)	23 Aug	23 Aug
American Golden Plover	0	1	34	0	35	33 (9 Oct)	16 Sep	19 Oct
Black-bellied Plover	0	0	4	0	4	1 (5 Oct)	5 Oct	20 Oct
Killdeer	2	1	0	1	4	1 (4 Aug)	4 Aug	11 Nov
Semipalmated Plover	1	2	0	0	3	2 (27 Sep)	9 Aug	27 Sep
Sanderling	0	9	0	0	9	9 (27 Sep)	27 Sep	27 Sep
Dunlin	0	0	0	2	2	1 (2 Nov)	2 Nov	3 Nov
Least Sandpiper	3	1	0	0	4	2 (16 Aug)	16 Aug	2 Sep
Pectoral Sandpiper	1	0	0	0	1	1 (26 Aug)	26 Aug	26 Aug
Semipalmated Sandpiper	61	22	0	0	83	25 (13 Aug)	4 Aug	24 Sep
Short-billed Dowitcher	0	2	0	0	2	2 (9 Sep)	9 Sep	9 Sep
Wilson's Snipe	0	1	0	0	1	1 (1 Sep)	1 Sep	1 Sep
Spotted Sandpiper	1	0	0	0	1	1 (2 Aug)	2 Aug	2 Aug
Solitary Sandpiper	0	2	0	0	2	1 (10 Sep)	10 Sep	30 Sep
Lesser Yellowlegs	45	19	0	0	64	17 (26 Aug)	1 Aug	22 Sep
Greater Yellowlegs	0	1	1	1	3	1 (26 Sep)	26 Sep	1 Nov
shorebird sp.	0	0	7	0	7	6 (7 Oct)	7 Oct	11 Oct
small shorebird sp.	0	23	5	0	28	13 (1 Sep)	1 Sep	30 Oct
Black-legged Kittiwake	0	0	0	1	1	1 (3 Nov)	3 Nov	3 Nov

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Bonaparte's Gull	1	1	1	231	234	44 (11 Nov)	22 Aug	15 Nov
Laughing Gull	7	210	2,510	2,605	5,332	1040 (6 Nov)	28 Aug	15 Nov
Franklin's Gull	0	0	1	0	1	1 (17 Oct)	17 Oct	17 Oct
Ring-billed Gull	0	65	1,338	657	2,060	516 (29 Oct)	11 Sep	15 Nov
Herring Gull	0	14	220	207	441	139 (7 Nov)	11 Sep	15 Nov
Lesser Black-backed Gull	0	0	3	1	4	1 (6 Oct)	6 Oct	14 Nov
Great Black-backed Gull	14	5	23	14	56	8 (7 Nov)	15 Aug	15 Nov
Least Tern	9	0	0	0	9	3 (6 Aug)	6 Aug	13 Aug
Caspian Tern	4	17	21	1	43	4 (19 Sep)	1 Aug	3 Nov
Black Tern	8	11	0	0	19	4 (6 Sep)	10 Aug	10 Sep
Common Tern	1	2	0	0	3	1 (6 Aug)	6 Aug	16 Sep
Forster's Tern	28	107	2,072	457	2,664	323 (31 Oct)	6 Aug	15 Nov
Red-throated Loon	0	0	1	1	2	1 (30 Oct)	30 Oct	13 Nov
Common Loon	1	1	47	11	60	9 (11 Oct)	17 Aug	14 Nov
Double-crested Cormorant	94	127	5,135	3,572	8,928	2055 (29 Oct)	16 Aug	15 Nov
Great Blue Heron	11	6	8	2	27	3 (29 Oct)	4 Aug	13 Nov
Great Egret	41	10	1	1	53	12 (12 Aug)	4 Aug	1 Nov
Snowy Egret	1	1	0	0	2	1 (4 Aug)	4 Aug	7 Sep
Little Blue Heron	2	0	0	0	2	2 (16 Aug)	16 Aug	16 Aug
Cattle Egret	15	1	0	0	16	14 (16 Aug)	4 Aug	9 Sep
Green Heron	9	1	0	0	10	3 (27 Aug)	2 Aug	3 Sep
Black Vulture	0	3	21	15	39	15 (28 Oct)	29 Sep	6 Nov
Turkey Vulture	0	10	891	534	1,435	268 (21 Oct)	10 Sep	15 Nov
Osprey	23	60	16	0	99	15 (2 Sep)	6 Aug	30 Oct
Golden Eagle	0	0	2	2	4	1 (20 Oct)	20 Oct	6 Nov
Northern Harrier	0	1	39	9	49	8 (9 Oct)	27 Sep	15 Nov
Sharp-shinned Hawk	0	170	813	60	1,043	227 (9 Oct)	11 Sep	14 Nov
Cooper's Hawk	0	52	216	24	292	64 (9 Oct)	3 Sep	13 Nov
Bald Eagle	0	48	54	17	119	13 (26 Sep)	3 Sep	10 Nov
Red-shouldered Hawk	1	4	36	57	98	19 (28 Oct)	28 Aug	14 Nov
Broad-winged Hawk	1	150	38	1	190	101 (30 Sep)	6 Aug	5 Nov
Red-tailed Hawk	0	6	35	74	115	30 (4 Nov)	2 Sep	13 Nov
Belted Kingfisher	2	2	7	1	12	2 (28 Oct)	9 Aug	3 Nov
Red-headed Woodpecker	1	57	18	3	79	7 (25 Sep)	31 Aug	13 Nov
Red-bellied Woodpecker	0	30	75	21	126	8 (21 Oct)	24 Sep	15 Nov
Yellow-bellied Sapsucker	0	11	76	7	94	9 (1 Oct)	20 Sep	13 Nov
Downy Woodpecker	1	10	15	2	28	3 (11 Sep)	14 Aug	9 Nov
Hairy Woodpecker	1	16	13	0	30	4 (25 Sep)	25 Aug	23 Oct
Northern Flicker	5	250	286	52	593	50 (20 Sep)	5 Aug	14 Nov
Pileated Woodpecker	2	2	0	0	4	1 (8 Aug)	8 Aug	27 Sep
American Kestrel	6	54	119	0	179	35 (9 Oct)	6 Aug	29 Oct
Merlin	2	28	56	13	99	8 (18 Oct)	21 Aug	15 Nov
Peregrine Falcon	5	13	19	3	40	4 (29 Sep)	1 Aug	15 Nov
Great Crested Flycatcher	4	2	0	0	6	2 (14 Aug)	14 Aug	19 Sep
Western Kingbird	0	1	0	1	2	1 (29 Sep)	29 Sep	9 Nov
Eastern Kingbird	199	51	0	0	250	23 (21 Aug)	2 Aug	16 Sep
Olive-sided Flycatcher	1	1	0	0	2	1 (15 Aug)	15 Aug	11 Sep
Eastern Wood-Pewee	24	37	6	0	67	5 (3 Sep)	5 Aug	8 Oct
Traill's Flycatcher	14	3	0	0	17	4 (21 Aug)	10 Aug	25 Sep
Least Flycatcher	3	4	1	0	8	2 (7 Sep)	9 Aug	2 Oct
Empidonax sp.	7	4	0	0	11	2 (3 Sep)	2 Aug	11 Sep
Eastern Phoebe	1	21	27	2	51	7 (25 Sep)	5 Aug	7 Nov
Yellow-throated Vireo	0	4	0	0	4	1 (2 Sep)	2 Sep	13 Sep
Blue-headed Vireo	0	1	10	0	11	2 (19 Oct)	25 Sep	28 Oct
Philadelphia Vireo	0	2	0	0	2	1 (19 Sep)	19 Sep	20 Sep
Warbling Vireo	7	1	0	0	8	1 (3 Aug)	3 Aug	13 Sep
Philadelphia/Warbling Vireo	0	1	0	0	1	1 (7 Sep)	7 Sep	7 Sep
Red-eyed Vireo	37	111	5	0	153	11 (20 Sep)	5 Aug	28 Oct
Blue Jay	0	1,434	2,686	33	4,153	334 (26 Sep)	11 Sep	9 Nov
Common Raven	1	6	0	1	8	3 (26 Sep)	28 Aug	4 Nov

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Tufted Titmouse	0	5	3	0	8	5 (27 Sep)	27 Sep	19 Oct
Horned Lark	0	0	8	26	34	21 (11 Nov)	4 Oct	14 Nov
Bank Swallow	922	245	1	0	1,168	135 (17 Aug)	1 Aug	11 Oct
Tree Swallow	48	969	1,866	141	3,024	272 (1 Sep)	2 Aug	13 Nov
N. Rough-winged Swallow	33	39	75	4	151	14 (19 Oct)	3 Aug	10 Nov
Purple Martin	790	386	0	0	1,176	121 (1 Sep)	1 Aug	22 Sep
Barn Swallow	794	395	1	0	1,190	119 (27 Aug)	1 Aug	1 Oct
Cliff Swallow	4	4	0	0	8	2 (10 Sep)	3 Aug	15 Sep
Ruby-crowned Kinglet	0	1	74	29	104	10 (28 Oct)	29 Sep	13 Nov
Golden-crowned Kinglet	0	6	115	34	155	13 (6 Oct)	20 Sep	10 Nov
Cedar Waxwing	1120	1393	1,483	5,525	9,521	1022 (6 Nov)	1 Aug	15 Nov
Red-breasted Nuthatch	0	23	29	24	76	9 (13 Nov)	14 Sep	13 Nov
White-breasted Nuthatch	4	0	5	1	10	3 (8 Aug)	8 Aug	4 Nov
Brown Creeper	0	1	10	12	23	3 (20 Oct)	29 Sep	13 Nov
Blue-gray Gnatcatcher	963	601	7	0	1,571	98 (18 Aug)	1 Aug	6 Oct
House Wren	0	0	2	0	2	1 (12 Oct)	12 Oct	21 Oct
Winter Wren	0	0	3	1	4	1 (14 Oct)	14 Oct	6 Nov
Gray Catbird	1	2	1	0	4	2 (20 Sep)	5 Aug	15 Oct
Brown Thrasher	0	0	1	0	1	1 (8 Oct)	8 Oct	8 Oct
Northern Mockingbird	17	7	0	0	24	6 (26 Aug)	5 Aug	27 Sep
European Starling	91	133	544	653	1,421	132 (9 Nov)	2 Aug	14 Nov
Eastern Bluebird	34	3	268	485	790	104 (11 Nov)	4 Aug	15 Nov
Veery	0	3	0	0	3	2 (14 Sep)	14 Sep	20 Sep
Swainson's Thrush	0	5	1	0	6	2 (19 Sep)	19 Sep	2 Oct
Hermit Thrush	0	0	2	2	4	1 (13 Oct)	13 Oct	5 Nov
Catharus sp.	0	3	0	0	3	3 (11 Sep)	11 Sep	11 Sep
Wood Thrush	0	1	0	0	1	1 (11 Sep)	11 Sep	11 Sep
American Robin	64	17	3,137	36,433	39,651	13229 (6 Nov)	1 Aug	15 Nov
House Sparrow	78	69	102	28	277	17 (8 Aug)	2 Aug	13 Nov
American Pipit	0	4	28	77	109	14 (2 Nov)	30 Sep	14 Nov
House Finch	35	32	467	288	822	52 (21 Oct)	2 Aug	13 Nov
Purple Finch	0	0	79	284	363	50 (13 Nov)	19 Oct	15 Nov
Pine Siskin	0	0	0	5	5	1 (4 Nov)	4 Nov	10 Nov
American Goldfinch	16	18	89	241	364	37 (13 Nov)	4 Aug	15 Nov
Chipping Sparrow	13	13	140	69	235	27 (15 Oct)	1 Aug	13 Nov
Field Sparrow	1	1	8	3	13	2 (15 Oct)	25 Aug	7 Nov
Dark-eyed Junco	0	0	53	38	91	28 (28 Oct)	8 Oct	13 Nov
White-crowned Sparrow	0	0	1	0	1	1 (14 Oct)	14 Oct	14 Oct
White-crowned Sparrow (Gambel's)	0	0	1	0	1	1 (14 Oct)	14 Oct	14 Oct
White-throated Sparrow	0	0	32	7	39	11 (14 Oct)	1 Oct	13 Nov
Savannah Sparrow	0	9	15	8	32	3 (30 Sep)	11 Sep	15 Nov
Song Sparrow	0	0	28	5	33	5 (24 Oct)	11 Oct	13 Nov
Lincoln's Sparrow	0	1	0	0	1	1 (29 Sep)	29 Sep	29 Sep
Swamp Sparrow	0	0	3	0	3	2 (19 Oct)	14 Oct	19 Oct
Eastern Towhee	0	0	7	0	7	2 (8 Oct)	8 Oct	28 Oct
Yellow-breasted Chat	1	2	0	0	3	1 (30 Aug)	30 Aug	25 Sep
Bobolink	357	1,137	7	0	1,501	462 (4 Sep)	3 Aug	13 Oct
Eastern Meadowlark	0	1	79	25	105	17 (20 Oct)	6 Sep	13 Nov
Orchard Oriole	425	16	0	0	441	28 (24 Aug)	1 Aug	10 Sep
Baltimore Oriole	96	11	3	1	111	11 (21 Aug)	3 Aug	5 Nov
Red-winged Blackbird	1,893	1,010	4,010	10,297	17,210	1865 (11 Nov)	1 Aug	15 Nov
Brown-headed Cowbird	22	19	1160	317	1518	187 (7 Oct)	1 Aug	15 Nov
Rusty Blackbird	0	0	239	449	688	99 (11 Nov)	9 Oct	14 Nov
Common Grackle	212	2	10,028	52,645	62,887	9318 (4 Nov)	2 Aug	15 Nov
Ovenbird	2	6	2	0	10	2 (1 Oct)	5 Aug	1 Oct
Worm-eating Warbler	16	1	0	0	17	3 (27 Aug)	4 Aug	8 Sep
Louisiana Waterthrush	4	0	0	0	4	1 (5 Aug)	5 Aug	12 Aug
Northern Waterthrush	93	69	0	0	162	13 (26 Aug)	2 Aug	30 Sep
Louisiana/Northern Waterthrush	10	0	0	0	10	2 (3 Aug)	3 Aug	28 Aug
Golden-winged Warbler	0	1	0	0	1	1 (8 Sep)	8 Sep	8 Sep

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Blue-winged Warbler	5	0	0	0	5	2 (17 Aug)	16 Aug	26 Aug
Black-and-white Warbler	54	47	1	0	102	9 (14 Sep)	4 Aug	9 Oct
Prothonotary Warbler	4	0	0	0	4	1 (3 Aug)	3 Aug	27 Aug
Tennessee Warbler	17	130	55	7	209	27 (29 Sep)	5 Aug	13 Nov
Nashville Warbler	0	26	33	1	60	10 (29 Sep)	3 Sep	3 Nov
Connecticut Warbler	0	1	0	0	1	1 (7 Sep)	7 Sep	7 Sep
Common Yellowthroat	2	7	0	0	9	2 (7 Sep)	28 Aug	20 Sep
American Redstart	219	309	4	0	532	69 (3 Sep)	1 Aug	8 Oct
Cape May Warbler	102	878	169	2	1,151	273 (10 Sep)	13 Aug	9 Nov
Northern Parula	46	590	29	0	665	68 (20 Sep)	6 Aug	20 Oct
Magnolia Warbler	9	59	7	0	75	10 (7 Sep)	21 Aug	10 Oct
Bay-breasted Warbler	0	56	1	0	57	13 (3 Sep)	3 Sep	8 Oct
Bay-breasted/Blackpoll Warbler	1	43	2	0	46	10 (14 Sep)	31 Aug	1 Oct
Blackburnian Warbler	40	84	2	0	126	28 (3 Sep)	13 Aug	7 Oct
Yellow Warbler	168	33	0	0	201	17 (10 Aug)	1 Aug	21 Sep
Chestnut-sided Warbler	18	27	1	0	46	6 (3 Sep)	15 Aug	9 Oct
Blackpoll Warbler	1	490	905	10	1,406	110 (30 Sep)	31 Aug	11 Nov
Black-throated Blue Warbler	10	43	20	0	73	10 (10 Sep)	24 Aug	21 Oct
Palm Warbler	0	103	496	16	615	48 (22 Oct)	7 Sep	11 Nov
Pine Warbler	3	18	62	4	87	10 (9 Oct)	8 Aug	13 Nov
Yellow-rumped Warbler	3	151	3,976	859	4,989	428 (29 Oct)	24 Aug	15 Nov
Yellow-throated Warbler	2	2	0	0	4	1 (6 Aug)	6 Aug	12 Sep
Prairie Warbler	17	14	0	0	31	3 (26 Aug)	4 Aug	27 Sep
Black-throated Green Warbler	6	79	25	0	110	17 (30 Sep)	24 Aug	25 Oct
Canada Warbler	1	1	0	0	2	1 (25 Aug)	25 Aug	11 Sep
Wilson's Warbler	0	2	0	0	2	1 (1 Sep)	1 Sep	3 Sep
warbler sp.	125	627	497	2	1,251	85 (2 Oct)	3 Aug	13 Nov
Summer Tanager	0	1	0	0	1	1 (8 Sep)	8 Sep	8 Sep
Scarlet Tanager	10	60	11	0	81	8 (25 Sep)	11 Aug	25 Oct
Rose-breasted Grosbeak	0	44	7	0	51	9 (11 Sep)	3 Sep	8 Oct
Blue Grosbeak	15	33	2	0	50	9 (11 Sep)	9 Aug	1 Oct
Indigo Bunting	22	97	42	0	161	12 (30 Sep)	6 Aug	19 Oct
Dickcissel	5	6	7	1	19	2 (1 Oct)	9 Aug	6 Nov
passerine sp.	0	33	0	0	33	33 (18 Sep)	18 Sep	18 Sep

MONTHLY SUMMARIES

August

During August, 11,699 individuals of 107 species were counted. The first quarter of August started out relatively cool with light winds primarily from the north and east. The season kicked off on 1 AUG with a slow day of unfavorable winds and rain. This trend did not last long as winds switched northwest bringing the season's first sprinkle of migrants on 2 AUG including 19 Orchard Orioles, 2 Northern Waterthrushes, and 6 Yellow Warblers. Noteworthy on 3 AUG were the season's first Prothonotary Warblers, a Cliff Swallow, a Warbling Vireo, 13 Yellow Warblers, and the season's first American Redstart. A slight cold front on the 4 AUG set up a nice diverse flight the next morning; 169 individuals of 34 species were tallied, including an early Tennessee Warbler and the season's first Louisiana Waterthrush. Featured on 6 AUG were a Yellow-throated Warbler and a Common Tern, which are quite scarce in the upper Bay. Light east winds on 9 AUG brought the first Dickcissel of the season

and a mix of other passerines including Least Flycatcher and a noticeable uptick of 42 Blue-gray Gnatcatchers. Light south winds on 10 AUG proved noteworthy with 3 Black Terns flying down the Bay and a nice push of 417 Chimney Swifts.

Mid-August was warmer with primarily south and east winds but that did not stop migrants from funneling into Turkey Point, which can be surprisingly productive on light southerlies. A classic example was 13 AUG, as warm temperatures and light winds brought the season's first Cape May and Blackburnian Warblers to the Point. A small cold front moved through on 14 AUG, setting up a nice flight the following morning. There were notable influxes of 19 Eastern Kingbirds, 27 American Redstarts, and 16 Yellow Warblers. Other highlights of the morning included Olive-sided Flycatcher, Dickcissel, and the first Chestnut-sided Warbler of the fall. Another diverse flight from light east/southeast winds occurred on 16 AUG. We counted 564 individuals of 40 species, ten of which were warblers. Some highlights from the morning included six Cape May Warblers, three Blackburnian Warblers, and the first Blue-winged Warbler of the fall. Bank Swallows peaked on 17 AUG with 135 tallied while 18 AUG brought another notable passerine flight on light southeast winds featuring the season's highest count of 98 Blue-gray Gnatcatchers.

The last quarter of the month started out slowly but ended with some notable flights and plenty of new arrivals. Temperatures were warm, but winds were mostly from the north and northeast. Passerine movement on 22 and 23 AUG was slow with the rain, but an early Bonaparte's Gull and an American Avocet were observed. Skies cleared for 24 AUG with a light north breeze, making for a diverse flight. The season's first Black-throated Blue and Black-throated Green Warblers were counted along with the seasonal peak of 28 Orchard Orioles. Two Yellow-rumped Warblers were the highlight of the day as they were the first of the fall. (While 24 AUG is early for Yellow-rumpeds, a few molting adults start moving through in mid- to late August [pers. observ.]). The following morning was equally productive featuring 937 individuals of 53 species, 15 of which were warblers. The season's first Canada Warbler was observed along with 12 Cape May Warblers. Light northeast winds on 28 AUG provided a nice flight that notably consisted of 12 Blackburnian Warblers and a Cliff Swallow. On 31 AUG, the month wrapped up on light northwest winds that brought several new arrivals. The season's first Red-headed Woodpecker flew over, along with the first Blackpoll Warbler, possibly signaling the beginning of what was just around the corner in September.

September

The count tallied 16,762 individuals of 151 species during September. The first quarter of the month started off cool with winds primarily north and northwest. Rain and strong winds leading a cold front had not yet cleared on 1 SEP. This

limited migration, but some noteworthy sightings including a Wilson's Warbler and an early Wilson's Snipe. Light northerlies and temperatures in the mid-50s °F on 3 SEP brought one of strongest early season flights of the fall. We counted 1,147 individuals of 63 species, including a noticeable influx of warblers; 25 Tennessee Warblers, 73 Cape May Warblers, 13 Bay-breasted Warblers, and 28 Blackburnian Warblers were noteworthy counts for the morning. Light northwest winds on 7 SEP set up a diverse flight featuring the season's only Connecticut Warbler, a Yellow-throated Vireo, and the max flight of 10 Magnolia Warblers. A light southerly breeze brought an interesting flight on 8 SEP that showcased the season's only Golden-winged Warbler and Summer Tanager. A strong cold front with northwest winds blew through on 9 SEP, timed with a remarkable flight on 10 SEP. The highlight of the morning was an impressive flight of 273 Cape May Warblers, while 10 Black-throated Blue Warblers marked their peak flight of the fall.

Mid-September had prevailing winds from the north and east with rather cool temperatures. There was a nice follow-up flight on 11 SEP featuring the season's second Olive-sided Flycatcher and 45 Cape May Warblers. Fairly strong south/southwest winds on 12 SEP did not result in many migrants past the Point besides the season's high of 17 Ruby-throated Hummingbirds. Ruby-throateds seemed to prefer a headwind and departed straight south out over the Bay without hesitation. Light variable winds occurring on 15 SEP brought a moderately diverse flight. There was another notable pulse with 67 Cape May Warblers, an uptick of 34 Northern Parulas, and the season's first Red-breasted Nuthatch. Although 16 SEP was slow with dreary conditions and east/northeast winds, it showcased an American Golden-Plover flying over the Bay. After several days of wet foggy weather and unfavorable winds, a cold front passed on 18 SEP bringing clear skies, north winds, and cooler temperatures. Benefits of the front passage were evident on 19 SEP with a diverse flight of 530 individuals and 71 species. The first Philadelphia Vireo of the fall flew by the Point along with a noticeable arrival of 13 Blackpoll Warblers and 23 Northern Flickers. There was also a slight uptick of raptors with 7 Sharp-shinned Hawks and 13 Broad-winged Hawks.

Late September brought cooler temperatures and winds primarily from the northwest with several remarkable flights in the last few days of the month. A cold snap on 20 SEP resulted in a season high of 68 Northern Parulas, the first Golden-crowned Kinglet and Yellow-bellied Sapsucker of the fall, and the season high of 50 Northern Flickers. Winds turned to the south and temperatures rose into the 70s °F over the following three days appearing to halt observations, but winds shifted back north on 25 SEP with a noticeable cold front. Most notable on 25 SEP was the first push of 262 Blue Jays. Northwest winds on 26 SEP brought a diverse flight that featured 68 species of 857 individuals; 85 Blackpoll Warblers, 57 Northern Parulas, and 29 Cape May Warblers were

tallied while the first influx of waterfowl took place over the Bay. Eight Northern Shovelers, 6 Gadwall, and 12 American Wigeon were all new arrivals for the fall. There were similar numbers of warblers on 27 SEP with west/southwest winds but the highlight of the morning was a flock of 9 Sanderlings flying down the Bay. A major cold front swept through on 28 SEP and brought one of the season's most diverse flights the following morning. On 29 SEP, 1,237 individuals of 76 species were showcased with the highlight being a Western Kingbird that moved around the Point with the swirling flocks of Blue Jays. Notable counts from the morning included 27 Tennessee Warblers, 10 Nashville Warblers, 106 Blackpoll Warblers, and the first influx of Yellow-rumped Warblers with 78. The first southbound flight of 112 Canada Geese was noted as well, along with an early flock of 5 Cackling Geese. Continued northwest winds resulted in 30 SEP being equally productive with 1,411 individuals of 78 species. Seasonal peaks occurred for Blackpoll Warblers with 110 and 17 Black-throated Green Warblers while a notable raptor movement took place that included 106 Sharp-shinned Hawks, 29 Cooper's Hawks and 101 Broad-winged Hawks.

October

The count tallied 51,830 individuals of 134 species during October. The first quarter of October was warm with winds primarily from the south and east. The month got off to a good start on 1 OCT with another strong flight of 95 Blackpoll Warblers and a nice uptick in Palm Warblers with 33. The following four days were relatively slow with primarily south and east winds and little movement, although there were several highlights including the season's first Horned Larks with 3 on 4 OCT, a single Black-bellied Plover on 5 OCT, a juvenile Lesser Black-backed Gull on 6 OCT, and the season's only Snow Goose on 7 OCT. A light cold front finally moved through late on 7 OCT, dropping temperatures which was correlated with a diverse flight on 8 OCT. We tallied 1,150 individuals of 67 species, including a notable increase in Yellow-rumped Warblers with 149 and another push of Blackpoll Warblers with 92. Fairly strong east/northeast winds on 9 OCT resulted in the season's first Rusty Blackbirds that flew over while there was also a strong raptor flight that included the seasonal high for Sharp-shinned Hawks. The highlight of the morning was a flock of 33 American Golden-Plovers and a Black-bellied Plover flying down the Bay.

Mid-October started off slowly with warm temperatures, light northeasterly winds, lacking any significant decreases in temperatures. However, towards the end of the period, a major front moved through, sinking temperatures into the high 40s °F. Light north winds set up a nice flight on 12 OCT that featured 1,619 individuals of 55 species. There was an uptick of Yellow-rumped Warblers with 375 along with the first noticeable increase in Common Grackles with 375. Light west/northwest winds on 14 OCT brought diverse movement.

Most notable was an influx of sparrows that included 11 White-throated Sparrows moving through the bushes around the Point and two White-crowned Sparrows, one of which was a western "Gambel's" type. On 15 OCT, light and variable winds provided a notable flight of 27 Chipping Sparrows and a push of 39 Palm Warblers. Finally, a long-anticipated major cold front with strong westerly winds blew through the afternoon of 16 OCT. The front did not provide much in the way of passerines on 17 OCT since the west winds were likely too strong or blew migrants to the coast, but there was a nice flight of 297 Yellow-rumped Warblers. The highlight of the day was a Franklin's Gull moving south over the Point with small groups of Laughing Gulls late in the morning. The strong west/northwest winds had died down by 19 OCT bringing the season's first Purple Finch and an American Golden-Plover. Light west winds on 20 OCT showcased a noteworthy raptor flight that included 75 Sharp-shinned Hawks, 20 Cooper's Hawks, and the first Golden Eagle of the fall. A seasonal high of 17 Eastern Meadowlarks was also noted.

Late October brought cooler temps and winds mostly from the northwest and south. Things kicked off on 21 OCT with another strong raptor flight that featured a second Golden Eagle and a major movement of 268 Turkey Vultures, their peak flight of the fall. There was also a nice influx of 23 Rusty Blackbirds. Strong northwest winds on 27 OCT brought a push of 427 Red-winged Blackbirds along with the last noticeable movement of 14 Northern Rough-winged Swallows, tying 19 OCT as the high count for the fall. Cooler temperatures and northeast winds on 28 OCT brought in the first noteworthy late fall migration. We counted 10,007 individuals of 61 species, including the first large Common Grackle flight of the fall with 6,232, a nice showing of 37 Rusty Blackbirds, and an uptick in Cedar Waxwings with 156. There was also a nice raptor flight that included 168 Turkey Vultures, the season high of 15 Black Vultures, and 19 Red-shouldered Hawks. The following day brought 20 mph (32 km/h) easterly winds and drizzle, which made for an interesting morning that included the peak flight of 2,055 Double-crested Cormorants. The season's high of 428 Yellow-rumped Warblers was also noted along with an impressive flight of 516 Ring-billed Gulls exiting the Elk River. Stiff south winds and low cloud cover appeared to produce a good waterbird flight on 30 OCT that included a Red-throated Loon and notable numbers of puddle ducks. There was also a strange movement of 15 Pied-billed Grebes flying down the Bay, a species rarely seen in active migration. This event could have been in response to the heavy rain and flooding the previous day that washed out the grass beds on the Susquehanna Flats where Pied-billed Grebes gather in large numbers during migration. This waterbird movement continued on 31 OCT with 5 Surf Scoters flying down the Bay and the peak flight of 323 Forster's Terns.

November

The count tallied 119,150 individuals of 103 species during November. Early November brought cooler temperatures and winds primarily from the northwest. On 2 NOV, light northwest winds resulted from a cold front the day before. The first 20 Tundra Swans of the season were counted along with the season's only White-winged Scoter which was noted flying down the Bay. There was also a notable passerine flight that included a season high of 14 American Pipits and influxes of 41 Eastern Bluebirds, 21 Purple Finches, and 1,162 Red-winged Blackbirds. The following morning was equally productive on light northwest winds. A juvenile Black-legged Kittiwake moving down the Bay was the highlight of the morning, although an unseasonable Chimney Swift was noteworthy as well. A strong flight occurred on 4 NOV featuring 16,327 individuals of 58 species. There was a major flight of 9,318 Common Grackles, making it the peak flight for the species while an influx of 3,302 American Robins and 244 Cedar Waxwings signaled what was to come in the days ahead. Light north winds with a slight, high cloud-cover brought a remarkable late season flight on 5 NOV. Record numbers of 13,229 American Robins and 1,022 Cedar Waxwings flew by marking seasonal peaks for both species. A late Dickcissel, Golden Eagle, and three Common Goldeneyes flying down the Bay were also noteworthy. Slightly warmer temperatures and light northwest winds on 9 NOV made for an interesting flight. A late Cape May Warbler was counted while the highlight was a second Western Kingbird for the fall, which dropped in at the Point late in the morning.

Moving into the final five days of the count, temperatures were warmer with winds mostly from the west and northeast. Fairly strong northeast winds on 11 NOV brought another impressive movement of over 9,000 Common Grackles but also the peak of 99 Rusty Blackbirds and 104 Eastern Bluebirds. An interesting movement of 21 Horned Larks also took place with several small flocks departing south over the Point but also one group flying south over the middle of the Bay. A nice cold front on 13 NOV brought in a final push of late season specialties. Seasonal peaks of 50 Purple Finches and 9 Red-breasted Nuthatches were noted while 2 late Tennessee Warblers and the second Red-throated Loon of the fall rounded out the morning. The count concluded on 15 NOV with strong westerly winds making for a slower flight that morning, but 600 individuals of 30 species were still tallied.

Species Accounts - The Season's Notable Five

Blue-gray Gnatcatcher

Turkey Point is an excellent location to see large concentrations of Blue-gray Gnatcatchers in the early fall. Predictions when the count started were that the numbers tallied at the Point would be impressive. Since 2021 was the first season of daily monitoring at Turkey Point, we didn't know how this season's

total would compare to others, but it seems notable enough in its own right to mention here. The first Blue-gray Gnatcatchers were counted on 1 AUG and the last was noted on 6 OCT. The peak flight for the species occurred on 18 AUG when 98 were tallied (Figure 2). Monthly totals were 963 in August, 601 in September, 7 in October, and none in November with a season total of 1,571. Gnatcatchers were present on 64 of the 107 days of monitoring.

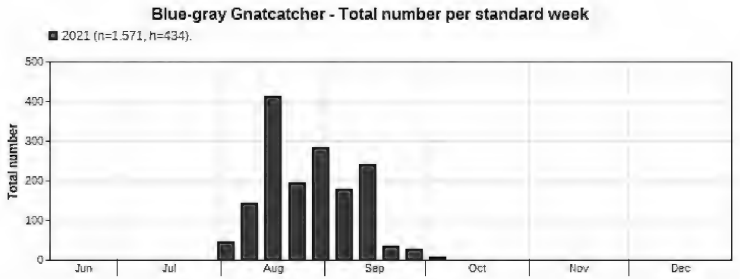

Figure 2. Timing of Blue-gray Gnatcatcher fall movement in 2021 over Turkey Point, Cecil County, Maryland.

American Robin

In early November in the eastern United States, American Robins can be seen migrating in massive loose flocks that sometimes cover the sky. They are a late season staple in most East Coast morning flight counts and typically make up a large amount of the season's total (Trektellen 2022a). The vast majority passed through the area in late October and early November and the few counted In August and September appeared to be young dispersing birds in juvenile plumage. The first American Robins were counted on 1 AUG and the last were counted on 15 NOV. While the 15 NOV was the end of our monitoring period at Turkey Point, these birds certainly continue to move through late November. The peak flight occurred on 6 NOV when 13,229 were counted (Figure 3). Monthly totals were 64 in August, 17 in September, 3,137 in October, and 36,433 in November with a season total of 39,651. American Robins were present on 64 of the 107 days of monitoring.

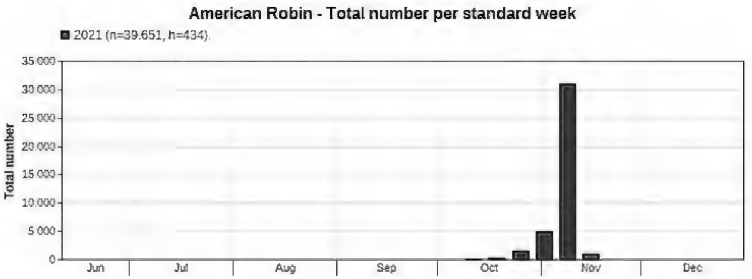

Figure 3. Timing of American Robin fall movement in 2021 over Turkey Point, Cecil County, Maryland.

Cape May Warbler

From mid-August until early November, we documented what was likely a banner year for Cape May Warblers, making them one the most notable species of the fall. Cape May Warbler populations fluctuate greatly during the breeding season, largely driven by the severity of Spruce Budworm, *Archips fumiferana* Clemens (Lepidoptera: Tortricidae), outbreaks, which can correspond to higher-than-average number of birds observed in the fall (Drever et al. 2018). Starting in early July, banding stations in northern Canada and counts along the Great Lakes were observing high numbers of Cape May Warblers (Giroux 2021, Trektellen 2022c). It was not long until they spilled over into the United States, arriving earlier than usual, and continuing to trickle through much later than usual. The first Cape May Warbler was noted at Turkey Point on 13 AUG and the last came through on 9 NOV. The peak flight of the season occurred on 10 SEP when 273 were counted in a morning (Figure 4). Monthly totals were 102 in August, 878 in September, 169 in October, and 2 in November, making for a season total of 1,151. Cape May Warblers were present for 76 of the 107 days of monitoring.

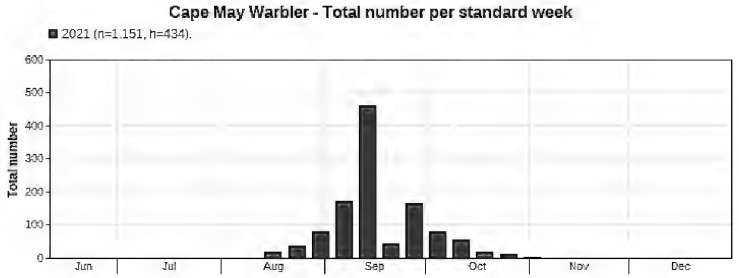

Figure 4. Timing of Cape May Warbler fall movement in 2021 over Turkey Point, Cecil County, Maryland.

Blackpoll Warbler

Blackpolls were the second most abundant warbler at Turkey Point this fall, edged out only by Yellow-rumped Warbler, and followed closely by Cape May Warbler. In late September and throughout October, Blackpolls played a key role in most flights with several mornings totaling over 100 individuals. The first Blackpoll Warbler of the season was noted on 31 AUG and the last moved through on 11 NOV. The peak flight for the species occurred on 30 SEP when 110 were counted (Figure 5). Monthly totals were 1 in August, 490 in September, 905 in October, and 10 in November with a season total of 1,406. Blackpoll Warblers were present on 57 of the 107 days of monitoring.

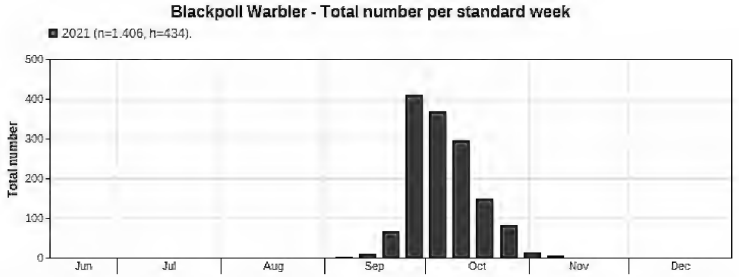

Figure 5. Timing of Blackpoll Warbler fall movement in 2021 over Turkey Point, Cecil County, Maryland.

Rusty Blackbird

A late season specialty from the north woods, Rusty Blackbirds moved past Turkey Point in impressive numbers. This location has always been known as a hotspot to see Rusty Blackbird migration in Maryland (eBird 2022), but daily counts were never conducted to see how many moved through during a full season. On days with the right conditions in early November, it was not uncommon to see flocks of 10–15 birds and tally over 50 in a morning. The first Rusty Blackbird flew over Turkey Point on 9 OCT and the last was noted on 14 NOV, though they certainly continued to move through the end of November. The peak flight occurred on 11 NOV when 99 were tallied in a morning (Figure 6). Monthly totals were 0 in August and September, 239 in October, and 449 in November, making for a season total of 688.

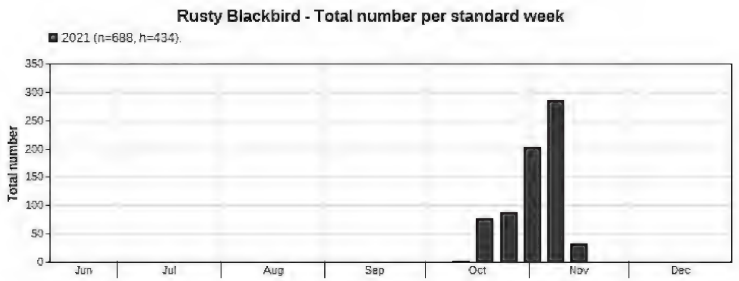

Figure 6. Timing of Rusty Blackbird fall movement in 2021 over Turkey Point, Cecil County, Maryland.

The count data are publicly available via Trektellen at the Maryland Biodiversity Project - Turkey Pt. morning flight page (Trektellen 2022b), eBird (2022), and Avian Knowledge Network (2022). Highlights and photos of the 2021 morning flight count can be found at the MBP special project page (Maryland Biodiversity Project 2021) and MBP blog (Maryland Biodiversity Project 2022).

DISCUSSION

Due to the count location at the tip of Turkey Point, migrant behavior changed drastically day-to-day correlated with changes in the weather, primarily wind direction, and varied a lot across species. Each taxonomic group (in some cases individual species) behaved differently at the Point and used certain flight paths; going over all of those individually would make for an extremely long report, but a few main groups are covered below. Overall, it was a difficult location to get a grasp of what was going on, especially on mornings with light/variable winds when birds were going every which way with many high and circling. However, there were some consistent patterns.

Most birders assumed that all birds crossed south over the Elk River once reaching Turkey Point. However, that is not the case, on most mornings a large majority of migrants were observed circling back north on either side of the peninsula depending on the wind direction that morning. There were a few exceptions, however. Raptors, hummingbirds, swallows, and Common Grackles often crossed without much hesitation. American Robins, Cedar Waxwings, Bobolinks, and blackbirds crossed on a regular basis as well but only in certain conditions (often a light headwind or light winds in general) and with some hesitation after circling and gaining altitude. Woodpeckers were never observed crossing even though many started to cross and flew out distantly over the river/bay but never committed and circled back to the Point. Warblers and other small passerines rarely crossed. Among small passerines, it was primarily the strong flyers such as Northern Waterthrush, Blackpoll Warbler, and Yellow-rumped Warbler that crossed most frequently. Crossing in this group occurred mainly on clear days with light winds, especially light headwinds and only after circling and becoming very high to the limit of visibility. It is also possible that more birds crossed at this height and were not visible to the counter.

During mornings with northwest winds, small passerines were observed moving west around the Point, coming from the east side, while mornings with northeast winds small passerines moved east around the Point, starting out from the west (Figure 7). As a rule, small passerines moved around the Point heading into any westerly component or into any easterly component in the wind. Flight direction on straight north winds was still primarily west, but slightly more mixed, while on straight south winds flight direction was primarily east. On mornings with slack winds, birds moved either direction around the Point, but in many situations most passerines still moved west. Flight direction was influenced by even the slightest west breeze, for example, making for a primarily westbound flight. These flight patterns seem logical as winds should concentrate migrants along the edge of Turkey Point opposite of where the wind is coming from. Once birds reached the Point they wrapped around into the wind and continued back north. What happened after birds circled back north at Turkey Point is unknown and not addressed through observations on morning flight behavior.

Figure 7. Primary flight directions of small passerines influenced by wind direction at Turkey Point, Cecil County, Maryland.

Figure 8. Flight paths of raptors over Turkey Point, Cecil County, Maryland.

There are three likely outcomes for birds reaching the tip at Turkey Point and circling back north. The first possibility is that birds continue north until crossing the Elk River at a narrower point then move south again. While this might be the case on some days, it is inconsistent with observations on mornings with northwest winds when birds appeared to move north along the west side of Turkey Point and would have had to cut back east across the peninsula to cross the river. The second possibility is birds continue north without a particular target location, feeding and moving through the trees until afternoon when activity slows or until each species finds a desired/suitable habitat to feed for the day. This could happen since in late afternoon, even after a big push in the morning, the tip of Turkey Point was often very quiet with little migrant activity while the woods 1 mi (1.6 km) north of the Point near the parking lot held many migrants. The third possibility is that birds continue a short distance north before circling back south and making several laps around Turkey Point over the course of a morning and eventually spend the day nearby or spread out north. While this outcome would affect the relative abundance estimates for the count, there are a few reasons to believe this occurs regularly. On several occasions with species that tend to flock, it appeared that the same group flew by several times over the morning. Also, there were cases where a particular individual flew past the Point several times in a morning and even several times over the course of a few days.

Another interesting behavior observed at Turkey Point is that many small passerines moved around the Point in loose groups of mixed species, similar to the makeup in daytime feeding flocks. This behavior is most likely attributed to birds simply feeding and moving quickly south in the morning as a type of refueling before continuing migration. When a group of birds come to an opening or end in the habitat like the clearing at the end of Turkey Point, they often fly out apparently looking for more habitat and notice they have reached the end of the land and are hesitant to cross, therefore they circle back north. This behavior was also evident as birds would build up in the southeast corner for example, where the woods ended at the field before flying out around the Point into a northwest wind. There were times when small passerines would fly high above the tree line, but that was mostly first thing in the morning or when winds were light. Most birds flew around the Point at tree-height appearing to fly out from the woods.

Waterbirds used simpler flight paths past Turkey Point compared to passerines. Most birds moved south down the Chesapeake Bay while occasional flights occurred over the Elk River. There were several days with notable gull flights over the Elk River, primarily on cloudy or rainy days with northeast or east winds. Notable numbers of Ring-billed Gulls moved down the river in the late season (over 500 one day), while small flocks of Herring Gulls and several Great Black-backed and Lesser Black-backed Gulls followed the river south as

well. Many of these birds likely follow the C&D Canal west from the Delaware River and end up in the Elk River then follow it out to the Chesapeake Bay. Flocks of migrant Double-crested Cormorants also used an interesting flight path. Their movements peaked at Turkey Point on days with strong east or northeast winds, presumably blowing birds inland from the coast. Most flocks flew south over the Elk River or directly over Turkey Point then angled down the Bay, but groups would also cross the Elk Neck Peninsula north of Turkey Point then move south over the Bay.

Raptors used three primary flight paths at Turkey Point. Most streamed over departing straight south across the mouth of the Elk River without hesitation and continued along the Bay's edge. Some smaller, more wind-dependent birds like Sharp-shinned Hawks would often circle and gain altitude or hesitate if winds were light. Two alternative flight paths were off the northeast and northwest corners of Turkey Point (Figure 8). Birds using these paths could be hard to detect from the Point since they depart before reaching the tip. These two alternate paths were used primarily by Turkey Vultures, but also by small numbers of accipiters and buteos. Birds departing off the northeast corner crossed the Elk River more perpendicular and angled toward the southeast while birds departing off the northwest corner angled southwest crossing the Bay and heading for Aberdeen Proving Ground in Harford County.

Based on this first year of count data, it is evident that migration past Turkey Point is highly variable with weather patterns affecting flight paths on a daily basis; and that songbirds, raptors, and waterbirds use different strategies when moving south in the fall. There is a lot to learn, for example, why do most individuals choose not to cross the water south of Turkey Point when land is clearly visible 1.5 mi (2.4 km) to the southeast or why birds prefer to fly into a light head wind when moving around the Point. This inaugural season established baseline data for bird movement down Maryland's Coastal Plain allowing for future comparisons of total individual and species relative abundance, but also how weather affects movement of species groups throughout the migratory season. Answers to these observations and questions after multiple seasons counting migrating birds on Turkey Point will not only contribute to the growing research and understanding of bird migration as a whole, but also hopefully provide another standardized way of tracking movements of bird populations.

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2022 Maryland May Count

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The annual May Count was held on Saturday, 14 May and Sunday, 15 May 2022. Talbot and Wicomico Counties conducted their counts on 15 May, while all other counties conducted their counts on 14 May. Results were submitted from 20 of Maryland's 23 counties (Table 1).

Table 1. 2022 Maryland May Count: participating counties, county codes, and compilers.

County	Code	Compiler
Garrett	GA	Duane Bailey
Allegany	AL	Mark Eanes
Washington	WA	Mark Abdy
Frederick	FR	David Smith
Montgomery	MO	Evelyn Ralston
Carroll	CA	Scott Hodgdon
Howard	HO	Gregg Petersen
Baltimore	BA	Elizabeth Errickson
Prince George's	PG	Kevin Bennett
Anne Arundel	AA	Steve Sheffield
Charles	CH	Lynne Wheeler
Calvert	CT	Sherman Suter
St. Mary's	SM	J. Tyler Bell
Kent	KE	Walter Ellison
Talbot	TA	Ron Ketter
Dorchester	DO	Harry Armistead
Caroline	CN	Debby Bennett
Wicomico	WI	Ellen Lawler
Worcester	WO	Marcia Balestri
Somerset	SO	Pat Valdata

The weather was rather uniform across the state on Saturday. Temperatures were mostly in the 60s °F, with mid to high 70s °F in the afternoon in Frederick County and on the Eastern Shore. Skies were overcast, with light showers reported throughout the state. Heavier rain occurred in the afternoon in Calvert County. Winds were generally light 0–8 mph (0–13 km/h) from the east and southeast. Sunday was slightly warmer, with a high of 82 °F (28 °C) reported from Wicomico County, and was overcast but dry, with light west winds.

A total of 409 counters in 298 parties reported 238 species and 122,050 total birds (Tables 2 and 3).

Table 2. 2022 Maryland May Count: Western and Central Maryland summary.

	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
Parties	19	9	10	29	9	13	56	28	16	11
Observers	28	14	14	47	9	21	72	31	23	16
Start Time	0540	0342	0500	0432		0540	0502	0630	0350	0545
Stop Time	2300	1958	2030	2035		2210	2100	2000	2224	2100
Driving										
hours	20.49	15.31	20	57.15		28.08	37.3		8.3	11.7
miles	121.09	99.5	320	529.49		297.1	342.3		64.5	101.2
Walking										
hours	49.85	24.63	18	86.95	30.5	40.32	214.4	81.6	69.6	67.25
miles	46.61	21.83	11	69.85	21.95	39.44	185.5	72.2	50.64	48.25
Owling										
hours	0.4	1.16	3	1.68		2.06	0.3		0.67	0.75
miles						1.95	0.3		1	1.1
Stationary										
hours	10.43	7	5	9.93		10.49	15.5	5.5	5.5	6.75
Total Species	139	137	114	140	103	119	132	147	124	143
Total Individuals	5,754	2,666	2,280	15,879	1,364	7,136	16,072	8,158	6,446	8,525

Table 3. 2021 Maryland May Count: Southern Maryland, Eastern Shore, and total summary.

	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Parties	21	18	5	1	14	8	11	8	6	6	298
Observers	29	19	7	2	21	9	19	11	9	8	409
Start Time	0500	0410	0330	0626	0400	0445	0400	0520	0445	0530	
Stop Time	1845	2037	2115	2046	1800	2030	2100	2150	1900	1945	
Driving											
hours	27.4	5.67	22.75	7.5	13.72	53	28	16.25	22.2	8.8	403.62
miles	199	27.3	321	30	111.45	303	311	130.5	230	60.3	3,598.73
Walking											
hours	51	47.87	14	6	39.65	33	31	13.5	6.7	6.25	932.07
miles	27.5	27.94	12	3.5	26.15	25	22	11.5	5.9	5.55	734.31
Owling											
hours	1.15		0.75		3.75	2.5	3	2	0.5		23.67
miles	0.5		10		37.2	9	2.5	15	4.3		82.85
Stationary											
hours	27.95	14.38	0.25		8.7		15	21.25	2	6.33	171.96
Total Species	132	152	137	97	137	152	128	97	135	101	238
Total Individuals	5,677	6,627	5,743	2,135	5,374	6,427	7,453	2,168	3,624	2,542	122,050

Tables 4 and 5 show the species documented during the count. There were a number of notable sightings.

A Tundra Swan was seen on a farm pond in Frederick, and hung around until at least 25 May (Figure 1). A Redhead was seen at Hanlon Park in Baltimore County (Figure 2). Hooded Mergansers were seen in several counties, notably 12 in Montgomery County and 15 in Prince George's County, with others in Garrett (1), Frederick (1), Howard (3), Anne Arundel (2), and Dorchester(1) Counties. Two Ruffed Grouse were counted, 1 in Allegany and 1 in Washington County (heard drumming). One Sandhill Crane was seen in Garrett County; there has been a breeding pair there for the last several years, although only one individual was seen on count day. One Red-necked Phalarope was seen along the Chesapeake and Ohio Canal at Violette's Lock (Figure 3). Eleven Least Bitterns were reported, 9 from Dorchester County and 1 each from Montgomery and Calvert Counties. One Olive-sided Flycatcher was seen in Washington County, and Alder Flycatchers were counted in Garrett and Calvert Counties. A Red Crossbill was heard-only at New Germany State Park (Garrett County). Red Crossbills have been seen there and at Cunningham Swamp Wildlife Management Area from the end of April through June, primarily at New Germany. A Nelson's Sparrow was reported from Anne Arundel County, and 8 Henslow's Sparrows; 7 from the expected locations in Garrett and Allegany Counties, but also a well-documented individual seen from 3 May to 14 June at Beltsville Agricultural Research Center. Other sparrow species, including White-crowned and White-throated, were present in much lower numbers this year than in 2021.

Brown Pelican numbers were significantly higher this year, including one seen at Fort Howard Park in Baltimore County (Figure 4). Overall, woodpecker and flycatcher numbers were significantly higher this year than in 2021. A notably high number was 1,802 Cedar Waxwings compared to 456 in 2021. And 2022 was a better year for most warblers, especially Tennessee and Blackpoll, though numbers for Cape May, Palm, and Yellow-rumped were low.

Several species missed last year were present in very low numbers in 2022: Surf Scoter, Ruffed Grouse, White-rumped Sandpiper, and Mourning Warbler. American Bittern was only noted from night calls in 2022.

No Evening Grosbeak were reported this year after 47 were counted in 2021. No Trumpeter Swan, Canvasback, Greater Scaup, Anhinga, Sedge Wren, or Orange-crowned Warbler were reported in 2022 either.

This was a mixed year for the count, with many spring migrants present and lower numbers of many winter denizens.

Figure 1. Tundra Swan, *Cygnus columbianus*. Allen's Dairy Farm, Frederick County, Maryland; 14 May 2022; photographed by James Speicher.

Figure 2. Redhead, *Aythya americana*. Hanlon Park, Baltimore (city), Maryland; 14 May 2022; photographed by Kyle Gardiner.

Figure 3. Red-necked Phalarope, *Phalaropus lobatus*. Violette's Lock, Montgomery County, Maryland; 14 May 2022; photographed by David Roberts.

Figure 4. Brown Pelican, *Pelecanus occidentalis*. Fort Howard Park, Baltimore (city), Maryland; 14 May 2022; photographed by Gale Janiszewski.

Additionally, nocturnal flight calls were recorded in Frederick County: 9 Yellow-billed Cuckoo, 1 Black-billed Cuckoo, 1 Sora, 1 Killdeer, 1 Semipalmated Plover, 3 Least Sandpiper, 2 Short-billed Dowitcher, 2 Spotted Sandpiper, 1 American Bittern, 1 Green Heron, 23 Veery, 1 Gray-cheeked Thrush, 39 Swainson's Thrush, 16 Wood Thrush, 2 Grasshopper Sparrow, 4 Chipping Sparrow, 9 White-throated Sparrow, 2 Savannah Sparrow, 14 Bobolink, 32 Ovenbird, 4 Northern Waterthrush, 11 Black-and-white Warbler, 111 Common Yellowthroat, 12 American Redstart, 7 Cape May Warbler, 24 Northern Parula, 1 Bay-breasted Warbler, 2 Chestnut-sided Warbler, 12 Black-throated Blue Warbler, 1 Scarlet Tanager, 4 Rose-breasted Grosbeak, and 14 Indigo Bunting. These audio-recorded observations were not included in Tables 4 and 5.

Table 4. 2022 Maryland May Count: Western and Central Maryland observed species.

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
Canada Goose	111	68	70	374	43	346	718	146	220	236
goose sp.				2						
Mute Swan				1						
Tundra Swan				1						
Wood Duck	23	18	1	32	17	10	69	17	52	16
Blue-winged Teal				6						
Mallard	18	12	6	117	16	34	66	160	73	66
Mallard (domestic type)				3						
American Black Duck								1		
Green-winged Teal				1						
Redhead								1		
Ring-necked Duck				1						
Lesser Scaup										1
Bufflehead				1				2		
Hooded Merganser	1			1	12		3		15	2
Common Merganser	14	7	2	8	28		1			
Red-breasted Merganser							1			
Ruddy Duck								2	1	
Northern Bobwhite						1				
Wild Turkey	21	12	13	19	1	1	17	4	37	6
Ruffed Grouse		1	1							
Ring-necked Pheasant	1									
Pied-billed Grebe					1					1
Rock Pigeon	18	14	22	182		62	90	74	71	48
Mourning Dove	81	46	44	406	16	191	399	177	262	159
Yellow-billed Cuckoo		23	10	7	2	5	8	5	11	4
Black-billed Cuckoo	2	2							1	
Common Nighthawk	2			1	12			1	1	1
Eastern Whip-poor-will	3	5	1							
Chimney Swift	34	45	36	300	19	203	355	513	87	103
Ruby-throated Hummingbird	30	6	4	21	1	10	22	10	10	7
Virginia Rail		1								

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
Sora		1		1						
Sandhill Crane	1									
Black-bellied Plover										3
Killdeer	14	10	5	42	1	10	20	9	29	6
Semipalmated Plover								4		4
Dunlin								1		
Least Sandpiper		1					23	25	11	38
Semipalmated Sandpiper		1								1
American Woodcock	7	3	3							
Wilson's Snipe				1						
Spotted Sandpiper	21	5	3	4	3	6	4	5	4	3
Solitary Sandpiper	8	2		8	1	5	8	2	1	
Lesser Yellowlegs							3	1		1
Greater Yellowlegs							2	1		2
Red-necked Phalarope					1					
peep sp.								8		
shorebird sp.								4		
Laughing Gull								17	7	58
Ring-billed Gull		2	1		1		3	43		157
Herring Gull								24		28
Great Black-backed Gull								2		52
gull sp.								4		15
Least Tern								18		6
Caspian Tern								77		16
Common Tern								13		1
Forster's Tern										6
Royal Tern										3
tern sp.								6		
Red-throated Loon										
Common Loon	1	1			1		1	4	1	1
Double-Crested Cormorant	4	7	8	13	56		22	119	67	363
Brown Pelican								1		26
Least Bittern					1					
Great Blue Heron	1		5	40	16	11	40	40	24	35
Great Egret				2	2		1	6		1
Snowy Egret								6		6
Little Blue Heron							1		1	1
Cattle Egret						2		3		31
Green Heron	11	4		19		5	26	8	14	7
Black-crowned Night-Heron				11	1					1
Yellow-crowned Night-Heron				4	1			6		2
Glossy Ibis										1
Black Vulture		1	2	71	5	84	115	13	60	51
Turkey Vulture	68	39	17	180	5	81	109	17	68	57
Osprey	1	.	1	3	2	1	11	38	33	74
Northern Harrier				4					4	1
Sharp-shinned Hawk			1			1				
Cooper's Hawk	3	4		12		1	4	3	1	1
Bald Eagle	4	2	6	12	2	7	19	5	19	10
Red-shouldered Hawk	8	6	4	42	2	22	57	17	19	8
Broad-winged Hawk	3	2					1			
Red-tailed Hawk	17	4	1	37		25	15	5	22	4
hawk sp.				1				1		

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
Barn Owl	1			7					4	
Eastern Screech-Owl	6	1	2	4		1	1			1
Great Horned Owl	3	1		2		1				
Barred Owl	4	4	1	8	2	7	11	9	11	5
Belted Kingfisher	5		2	24		7	18	2	1	4
Red-headed Woodpecker	10		2	33		18	2		5	
Red-bellied Woodpecker	48	47	24	247	23	119	349	88	86	114
Yellow-bellied Sapsucker	3	1								
Downy Woodpecker	23	12	6	97	14	40	130	57	28	35
Hairy Woodpecker	18	7	7	24	4	13	49	12	15	13
Northern Flicker	29	11	8	38	7	22	59	46	21	11
Pileated Woodpecker	14	22	17	50	12	19	66	21	24	22
woodpecker sp.		2								
American Kestrel	4	1		12		5		1	9	1
Peregrine Falcon		1	4					2		
Great Crested Flycatcher	15	12	22	184	26	50	154	74	32	74
Eastern Kingbird	25	7	4	102	10	65	104	59	48	61
Olive-sided Flycatcher			1							
Eastern Wood-Pewee	43	16	41	179	14	46	148	34	44	58
Acadian Flycatcher	1	4	33	78	8	21	105	14	25	24
Alder Flycatcher	1									
Willow Flycatcher	5	2		18		7	5	1		
Least Flycatcher	2	2								
Empidonax sp.				1				1		
Eastern Phoebe	31	19	28	77	5	28	67	17	27	11
flycatcher sp.				1						
White-eyed Vireo	4	1	2	30	6	24	33	9	35	49
Yellow-throated Vireo	6	6	3	18	3	11	36	4	12	5
Blue-headed Vireo	61	2					9	3		2
Warbling Vireo		15	17	72	13	12	18	30	1	
Red-eyed Vireo	281	145	113	401	46	75	455	147	141	190
vireo sp.		2						1		
Blue Jay	90	45	55	330	22	160	424	106	81	109
American Crow	147	49	39	251	21	215	378	108	91	139
Fish Crow		1	8	96	15	18	75	39	47	88
crow sp.				37			53	21	10	4
Common Raven	38	11	4	31		2	4	1	4	2
Carolina Chickadee			41	152	28	63	161	93	72	101
Black-capped Chickadee	161	22	1							
Tufted Titmouse	91	35	34	156	29	46	263	102	76	152
Horned Lark			10	21		2	12			
Bank Swallow		1		6		3		6	12	11
Tree Swallow	65	6	16	150	15	45	169	144	207	148
N. Rough-winged Swallow	3	9	28	76	6	12	43	60	11	27
Purple Martin	37			73	11	21	128	5	21	24
Barn Swallow	205	22	18	330	13	211	329	127	124	412
Cliff Swallow	71	16	20	40		18	28		15	
swallow sp.				3				14		
Ruby-crowned Kinglet	1	1		1			2	2		
Golden-crowned Kinglet	12									
Cedar Waxwing	60	70	70	287	61	3	285	166	222	113
Red-breasted Nuthatch	14	1								
White-breasted Nuthatch	42	15	9	69	10	37	107	36	27	21

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
Brown Creeper	16									
Blue-gray Gnatcatcher	10	18	25	151	24	107	203	121	84	95
Carolina Wren	18	49	66	381	70	105	433	180	169	248
House Wren	73	15	13	172	9	74	155	63	25	20
Winter Wren	1									
Marsh Wren								1		6
Gray Catbird	138	70	65	557	41	386	646	326	78	95
Brown Thrasher	33	23	14	93	2	36	55	11	37	44
Northern Mockingbird	1	6	33	220	1	125	174	55	90	82
European Starling	132	151	43	1220	39	679	511	391	414	400
Eastern Bluebird	39	23	35	191	10	101	249	72	111	76
Veery	9		2	3	5	4	10	1	4	1
Gray-cheeked Thrush								2		
Swainson's Thrush	4	1		5	1	7	11	1	4	2
Hermit Thrush	15					3	1	1		
Wood Thrush	54	14	69	274	10	146	267	35	45	32
American Robin	332	173	62	995	46	336	681	643	198	256
House Sparrow	43	50	64	453	43	198	250	158	81	135
House Finch	14	21	36	206	10	89	177	127	52	129
Purple Finch	11	1		1						
Red Crossbill	1									
Pine Siskin	2									
American Goldfinch	170	58	57	308	14	138	339	142	86	84
Grasshopper Sparrow	11	4	8	33	2	4	19	2	38	13
Chipping Sparrow	130	38	41	330	10	133	254	61	102	105
Field Sparrow	53	9	28	165	4	60	70	15	17	9
Dark-eyed Junco	10								1	
White-crowned Sparrow	1			1		1				
White-throated Sparrow	1	13		21	1	10	47	76	14	17
Vesper Sparrow		1		3						
Seaside Sparrow										4
Nelson's Sparrow										1
Saltmarsh Sparrow										1
Henslow's Sparrow	5	2							1	
Savannah Sparrow	4	3		6	2	1	13	13	29	14
Song Sparrow	159	46	16	296	12	101	232	63	49	54
Lincoln's Sparrow		2						1		
Swamp Sparrow	45	6	1	5		9	10	9	5	4
Eastern Towhee	152	36	33	114	10	76	251	35	53	47
sparrow sp.								2		
Yellow-breasted Chat	1		2	6	1	1	9	3	7	4
Bobolink	106	7		28			64	3	22	53
Eastern Meadowlark	52	17	14	85	1	11	22	7	56	19
Orchard Oriole	5	12	2	49	7	12	73	68	31	22
Baltimore Oriole	57	20	33	123	7	57	158	102	30	11
Red-winged Blackbird	413	173	27	910	45	344	760	401	423	898
Brown-headed Cowbird	69	19	31	221	11	121	240	104	100	88
Rusty Blackbird		20				1				
Common Grackle	78	62	61	506	30	204	242	162	161	455
Ovenbird	105	23	26	123	2	54	159	44	53	20
Worm-eating Warbler		9	5	9		8	10	3	2	1
Louisiana Waterthrush	14	4	9	41	4	11	23	7	5	
Northern Waterthrush	10	3		5	1	4	8	7	1	4

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA
waterthrush sp.				1						
Blue-winged Warbler		1	8					1		
Black-and-white Warbler	25	2	6	27	1	12	74	90	25	12
Prothonotary Warbler	1	1	3	4	7				9	7
Tennessee Warbler				1			10	3	1	
Nashville Warbler		1		2				1		2
Mourning Warbler		1								
Kentucky Warbler	3	1	1				6			3
Common Yellowthroat	165	32	43	151	13	84	384	198	101	112
Hooded Warbler	6	6	4	13	1	1	5	1	6	6
American Redstart	80	27	3	119	5	25	162	63	43	34
Cape May Warbler	1	2					2	4		
Cerulean Warbler	7	6	2	11		1	2			
Northern Parula	34	17	20	72	14	31	249	151	95	58
Magnolia Warbler	45	18	2	10	1	6	20	23	7	2
Bay-breasted Warbler	2	6	1					5	2	
Blackburnian Warbler	19	1	4	1		1	2	1		1
Yellow Warbler	64	16	10	51	2	41	67	60	17	8
Chestnut-sided Warbler	96	16	2	7	1	3	6	4		4
Blackpoll Warbler	2			6	2	1	25	61	39	9
Black-throated Blue Warbler	24	3	7	9	1	12	76	47	40	11
Palm Warbler	1							1		
Pine Warbler	2	2	6	2		4	9	2	11	12
Yellow-rumped Warbler	20		2	28		12	53	85	40	19
Yellow-throated Warbler	4	4	3	1	5	1	3	1	6	10
Prairie Warbler		7	23	8	3	4	38	6	16	8
Black-throated Green Warbler	66	20	6	20		1	11	6	3	
Canada Warbler	8	2	3	3			1	1		
Wilson's Warbler		2	1							2
warbler sp.		14		2				3		
Summer Tanager		1					1	1	13	9
Scarlet Tanager	63	36	18	102	9	25	143	20	29	26
Summer/Scarlet Tanager								1		
Northern Cardinal	112	125	147	787	90	430	1051	410	260	646
Rose-breasted Grosbeak	46			7		6	10	7	4	
Blue Grosbeak				10		5	25	4	39	33
Indigo Bunting	50	92	77	307	41	102	296	48	147	179
Dickcissel							1			

Table 5. 2022 Maryland May Count: Southern Maryland, Eastern Shore, and total observed species.

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Snow Goose									2		2
Canada Goose	201	75	183	40	171	162	176	198	137	79	3,754
goose (domestic)		1									1
goose sp.											2
Mute Swan											1
Tundra Swan											1
Muscovy Duck (domestic type)			1								1
Wood Duck	21	26	5	12	16	25	21	1	19		401

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Blue-winged Teal						2					8
Northern Shoveler									1		1
Gadwall						1					1
Mallard	22	54	10	18	275	241	27	30	20	3	1,268
Mallard (domestic type)		1									4
American Black Duck					1	20			1	41	64
Green-winged Teal											1
Redhead											1
Ring-necked Duck									1		2
Lesser Scaup											1
Surf Scoter							1				1
Bufflehead	1										4
Hooded Merganser						1					35
Common Merganser				1							61
Red-breasted Merganser											1
Ruddy Duck											3
duck sp.										7	7
Northern Bobwhite						12	13			1	27
Wild Turkey	39	10	19	10	19	30	24	5	7		294
Ruffed Grouse											2
Ring-necked Pheasant											1
Pied-billed Grebe											2
Rock Pigeon		21	2		3	3	41		3		654
Mourning Dove	141	156	139		103	132	176	56	32	11	2,727
Yellow-billed Cuckoo	5	3	1	5	18	8	10	10	12	1	148
Black-billed Cuckoo								1			6
Yellow/Black-billed Cuckoo								1			1
Common Nighthawk		1	2				1		1		23
Chuck-will's-widow		2	6		2	27			6	6	49
Eastern Whip-poor-will						2	3	1	2		17
Chimney Swift	83	82	34	11	35	28	256	12	5	1	2,242
Ruby-throated Hummingbird	28		7	1	20	11	18	7	7	6	226
King Rail						12					12
Clapper Rail		1			1	38			10	46	96
Virginia Rail		3	2	7	5	29			2	2	51
Sora											2
Common Gallinule						2					2
American Coot					1	1					2
Sandhill Crane											1
Black-necked Stilt						6				2	8
American Oystercatcher									9		9
Black-bellied Plover			7		11	3	4		142		170
Killdeer	17	14	13	6	25	32	23	3	9	6	294
Semipalmated Plover	10	19	6	51	7	61	31	2	17		212
Ruddy Turnstone		1	2		4	5			13		25
Stilt Sandpiper						1					1
Sanderling		1	2			4			2		9
Dunlin		7				302	2	27	208	1,144	1,691
Purple Sandpiper									1		1
Least Sandpiper	7	62	15	43	4	134	19	3	45	6	436
White-rumped Sandpiper						1					1
Semipalmated Sandpiper		5	16	2	5	64		2	4	42	142
Short-billed Dowitcher	1	30	11			32			14		88

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
American Woodcock			1								14
Wilson's Snipe	1						6			1	9
Spotted Sandpiper	2	8	1	1	2	4	7		6	1	90
Solitary Sandpiper		1		1	2	3				1	43
Lesser Yellowlegs	2	2	1	4	6	19	5		2	1	47
Willet			2		3	15			19	17	56
Greater Yellowlegs	1	3	4	4	3	38			12	52	122
Lesser/Greater Yellowlegs			1								1
Red-necked Phalarope											1
peep sp.			4								12
shorebird sp.		11									15
Bonaparte's Gull	1			2			42				45
Laughing Gull		45	65	64	517	268	1847	296	364	86	3,634
Ring-billed Gull	11	116	53	17	22	24	104	6			560
Herring Gull	6	19	24		26	56	2		46	32	263
Great Black-backed Gull			7		1	1			20	1	84
gull sp.							4				23
Least Tern		2		5	9	3	4		2		49
Caspian Tern	1	5		4	1	11					115
Common Tern					3				4	2	23
Forster's Tern	5	7		1	21	40	2		35	12	129
Royal Tern	2	1	4		1	8	1		6		26
tern sp.											6
Black Skimmer									9		9
Red-throated Loon									1		1
Common Loon		1	5			3			2	1	22
Double-Crested Cormorant	107	183	306	33	103	33	36	11	296	9	1,776
Brown Pelican		6	73			11			6	1	124
Least Bittern		1				9					11
Great Blue Heron	102	27	28	16	46	83	38	41	4	11	608
Great Egret	10	1	1		5	58	1	2	13	24	127
Snowy Egret		15			4	28	1		18	30	108
Little Blue Heron									2		5
Tricolored Heron						1			3	1	5
Cattle Egret					10	4					50
Green Heron	5	15	2	3	18	8	11	3	6	3	168
Black-crowned Night-Heron	1								1		15
Yellow-crowned Night-Heron						1					14
Glossy Ibis					24	28			120	7	180
Black Vulture	87	46	8	15	16	9	44	4	3	2	636
Turkey Vulture	45	30	10	35	71	47	143	71	49	19	1,161
Osprey	90	73	47	20	56	55	27	7	12	8	559
Northern Harrier		1			2	4	1			2	19
Sharp-shinned Hawk	2										4
Cooper's Hawk	1	2			1		3	1			37
Bald Eagle	49	6	15	10	11	62	48	9	5	9	310
Red-shouldered Hawk	11	9	4	1	2	1	11	4	4		232
Broad-winged Hawk											6
Red-tailed Hawk	6	3	2	3	4	6	9	3	1		167
hawk sp.											2
Barn Owl	1	1				2					16
Eastern Screech-Owl		2	1	1	1	12	2				35
Great Horned Owl	5	1		2	6	2	2				25

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Barred Owl	2	7		8	8	1	11	1			100
Belted Kingfisher	11	4				1	3				82
Red-headed Woodpecker	2	3	13		7	33	1	7	9	5	150
Red-bellied Woodpecker	89	101	40	41	35	20	50	18	6	3	1,548
Yellow-bellied Sapsucker											4
Downy Woodpecker	44	36	18	16	28	19	27	8	9	3	650
Hairy Woodpecker	6	20	4	11	8	6	4	2	1	1	225
Northern Flicker	11	13	10	1	11	12	6	2	4	6	328
Pileated Woodpecker	38	27	10	3	10	14	25	9	8	1	412
woodpecker sp.											2
American Kestrel		3	1				1				38
Merlin							1				1
Peregrine Falcon											7
Great Crested Flycatcher	62	64	65	35	99	83	60	34	52	28	1,225
Eastern Kingbird	38	48	38	11	23	27	24	15	5	5	719
Olive-sided Flycatcher											1
Eastern Wood-Pewee	74	78	28	11	42	23	31	6	24	13	953
Acadian Flycatcher	64	111	25	4	12	8	12	6	8		563
Alder Flycatcher		1									2
Willow Flycatcher					1						39
Least Flycatcher	1	1									6
Empidonax sp.											2
Eastern Phoebe	39	8	1	4	2	2	19	2	3	1	391
flycatcher sp.											1
White-eyed Vireo	41	36	27	2	12	22	20	15	41	16	425
Yellow-throated Vireo	23	16			1	1	2	3	7		157
Blue-headed Vireo	2	2	1								82
Philadelphia Vireo		1									1
Warbling Vireo				5							183
Red-eyed Vireo	175	219	74	31	63	28	44	15	19	5	2,667
vireo sp.											3
Blue Jay	61	67	52	28	67	24	50	22	10	4	1,807
American Crow	127	139	117	7	80	67	93	23	51	22	2,164
Fish Crow	27	51	15	8	14	12	16	10	16	5	561
crow sp.			3			18		2	4		152
Common Raven	2										99
Carolina Chickadee	82	96	77	18	61	66	69	43	35	10	1,268
Black-capped Chickadee											184
Tufted Titmouse	126	143	99	23	69	71	55	44	54	6	1,674
Horned Lark	1	10	1	6	5	4	32		3		107
Bank Swallow	4	51	6			15	16				131
Tree Swallow	44	21	66	72	101	251	146	13	32	32	1,743
N. Rough-winged Swallow	19	10	6	5	2	1	3				321
Purple Martin		50	53	13	97	44	121	37	14	10	759
Barn Swallow	120	224	224	61	134	336	233	42	97	11	3,273
Cliff Swallow			1			1					210
swallow sp.						1					18
Ruby-crowned Kinglet	2					1					10
Golden-crowned Kinglet											12
Cedar Waxwing	119	120	113	3	62	16	3	23	6		1,802
Red-breasted Nuthatch											15
White-breasted Nuthatch	37	26	7	4	15		13	3	3	1	482
Brown-headed Nuthatch		6	10		25	43			11	10	105

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Brown Creeper											16
Blue-gray Gnatcatcher	79	91	32	12	23	34	35	17	47	7	1,215
Carolina Wren	134	205	161	97	145	83	101	41	50	19	2,755
House Wren	4	10	8		12	21	7	14	9	21	725
Winter Wren											1
Marsh Wren		5	38			16				27	93
Gray Catbird	27	132	51	15	41	42	31	15	34	9	2,799
Brown Thrasher	34	43	37	19	45	18	31	3	2		580
Northern Mockingbird	95	68	73	33	55	36	91	30	17	10	1,295
European Starling	199	105	185	103	161	229	565	145	186	23	5,881
Eastern Bluebird	127	106	102	19	123	31	73	24	20	11	1,543
Veery		6	2		5	1			1		54
Gray-cheeked Thrush		2									4
Gray-cheeked/Bicknell's Thrush		1									1
Swainson's Thrush	3	11	2		2						54
Hermit Thrush	1		2				1	2	1		27
Wood Thrush	69	68	26	12	23	9	20	12	20	3	1,208
American Robin	90	110	102	91	104	98	354	87	38	35	4,831
House Sparrow	44	86	100	64	28	26	136	21	36	10	2,026
American Pipit	2	1									3
House Finch	72	86	50	10	41	12	47	18	9	4	1,210
Purple Finch							1				14
Red Crossbill											1
Pine Siskin											2
American Goldfinch	106	118	30	31	68	32	93	12	34	1	1,921
Grasshopper Sparrow	7	27	28	4	27	1	12	2	2		244
Chipping Sparrow	171	153	163	39	128	56	127	14	30	6	2,091
Field Sparrow	19	17	13		32	8	15	14	9		557
Dark-eyed Junco											11
White-crowned Sparrow											3
White-throated Sparrow	11	8	4		4	5	25	1	3		261
Vesper Sparrow						1	3				8
Seaside Sparrow		1	12			35		1	15	70	138
Nelson's Sparrow											1
Saltmarsh Sparrow			4					1		1	7
Henslow's Sparrow											8
Savannah Sparrow	6	18	1		1	7	23			1	142
Song Sparrow	13	51	11	2	3	20	7	2	4	1	1,142
Lincoln's Sparrow											3
Swamp Sparrow	1	10	14			2	1			3	125
Eastern Towhee	26	41	14	8	4	28	4	2	11	9	954
sparrow sp.						2					4
Yellow-breasted Chat	8	12	11		5	11	3	6	3		93
Bobolink		21	34		1	1	10				350
Eastern Meadowlark	6	23	33			13	13	7	4	3	386
Orchard Oriole	30	45	9	10	19	25	19	15	6	7	466
Baltimore Oriole	9	7	5	1	5	1	5				631
Red-winged Blackbird	255	319	535	151	348	779	119	90	83	159	7,232
Brown-headed Cowbird	158	135	78	44	97	97	110	14	36	6	1,779
Rusty Blackbird											21
Common Grackle	244	197	493	185	358	412	388	102	167	60	4,568
Boat-tailed Grackle						8		5	7	19	39
blackbird sp.					6	24	7				37

Species	CH	CT	SM	KE	TA	DO	CN	WI	WO	SO	Totals
Ovenbird	65	58	30		14	53	33	16	69	6	953
Worm-eating Warbler	5	28	7		10	31	6	3	18	1	156
Louisiana Waterthrush	23	19	11		6	1	7	3	7		195
Northern Waterthrush	1	4	2		4		2		1		57
waterthrush sp.											1
Blue-winged Warbler		1									11
Black-and-white Warbler	16	12	8	2	18	9	5	4	15		363
Prothonotary Warbler	16	5	1	1	5	1	21	13	33	2	130
Tennessee Warbler				1							16
Nashville Warbler					1						7
Mourning Warbler											1
Kentucky Warbler	6	4	4				9		2		39
Common Yellowthroat	65	176	82	24	110	120	43	22	29	33	1,987
Hooded Warbler	15	22	9								95
American Redstart	37	20	11	4	35	5			7		680
Cape May Warbler	3		1		1						14
Cerulean Warbler		1									30
Northern Parula	92	133	39	7	29	5	6	3	6		1,061
Magnolia Warbler	4	7	2		7	1					155
Bay-breasted Warbler	1	1	1								19
Blackburnian Warbler	2		1		1						34
Yellow Warbler	6	14	10	1	10	3	1		2	1	384
Chestnut-sided Warbler	5	3			3						150
Blackpoll Warbler	20	35	11	3	21		3		2		240
Black-throated Blue Warbler	2	28	3	1	4						268
Palm Warbler		1					2				5
Pine Warbler	34	17	78		27	69	22	33	41	5	376
Yellow-rumped Warbler	15	31	8	1	8	1	8		3	1	334
Yellow-throated Warbler	23	59	8		1	1	8	7	19		164
Prairie Warbler	15	12	18			1	10	9	14	2	194
Black-throated Green Warbler	1	3	5	1	2						145
Canada Warbler					1						19
Wilson's Warbler	1	1									7
warbler sp.											19
Summer Tanager	16	53	34		9	22	26	11	28	2	226
Scarlet Tanager	42	32	10	4	12	4	15	4	6		600
Summer/Scarlet Tanager								1			2
Northern Cardinal	283	322	338	169	186	124	195	62	50	24	5,811
Rose-breasted Grosbeak	2	7	2	1	1		2				95
Blue Grosbeak	28	22	58	12	44	37	48	19	23	3	410
Indigo Bunting	160	126	131	73	73	56	66	19	30	2	2,075
Dickcissel											1

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2022 Maryland Fall Count

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The annual Maryland Fall Count is held on the third weekend in September with the choice of Saturday or Sunday at the discretion of the county and/or compiler. In 2022, data from 12 of Maryland's 23 counties were compiled. Seven counties conducted organized counts on 17 September and five counted on 18 September (Table 1). Having results for twelve counties is average participation for Fall Count. I did not choose to continue the experiment used last year to use eBird reports for those counties where no organized counts were held. For several counties this seasonal count has been a long-held tradition, with this year being the 32nd count for Allegany, 29th for Howard, and 26th for Dorchester.

This was the eighth seasonal count conducted since the onset of the COVID-19 pandemic. Unlike earlier counts this count was conducted with fewer restrictions and was more consistent with historical norms. Party sizes were generally smaller, participants adhered to social distancing and if any, virtual tallies were the norm.

Table 1: 2022 Maryland Fall Count: participating counties, county codes, survey dates, and compilers.

County	Code	Survey Date	Compiler
Allegany	AL	18 September 2022	Chuck Hager
Washington	WA	17 September 2022	Doris Berger
Carroll	CA	17 September 2022	Scott Hodgdon
Howard	HO	17 September 2022	Mike McClure, Chuck Stirrat
Baltimore	BA	17 September 2022	individual submissions (Stirrat)
Prince George's	PG	18 September 2022	Matt Felperin
Calvert	CT	18 September 2022	Sherman Suter
Talbot	TA	18 September 2022	Ron Ketter
Dorchester	DO	17 September 2022	Harry Armistead
Caroline	CN	17 September 2022	Debby Bennett
Wicomico	WI	17 September 2022	Paul Bystrak
Somerset	SO	18 September 2022	Pat Valdata

The weather varied over the extent of the state and from Saturday to Sunday, but the difference was not dramatic, Temperatures were in the high 50s °F to low 60s °F pre-dawn; mid-morning temperatures were in the 60s °F to 70s °F; afternoon temperatures were in the mid to high 70s °F to low 80s °F both days. Winds for all counts were generally light (<10 mph [<16 km/h]) with a southerly component; Somerset reported slightly higher winds on Sunday afternoon. Cloud coverage was quite consistent across the state with mostly clear to mostly sunny skies both days, except for Allegany on Sunday afternoon where it was cloudier. There were no reports of precipitation either day, except for a couple of reports of fog at dawn. Several reports referred to the day as a pleasant fall day.

A total of 225 field observers in 147 parties turned up 195 species and 69,434 individual birds (Table 2) compared to averages of 197.6 species and 67,603.3 individuals for the prior nine counts. They spent a total of 497.1 hours and covered 409.3 mi (658.7 km) on foot and spent 54.5 hours stationary. Birders spent 167.2 hours and 1,826.0 mi (2,938.7 km) birding by car. Two parties traveling by other modes covered 4.3 mi (6.9 km) in 2.4 hours. One person birded 3.0 hours over 7.5 mi (12.1 km) by boat. Participants in eight counties reported spending 26.3 hours traveling 101.9 mi (164.0 km) while owling. Feeder watchers spent 45.2 hours. This marked at least eleven years in a row a Youth MOS group has participated. This year's effort (795.7 party-hours) is just slightly below the average of the prior nine counts (819.5).

Table 2. 2022 Maryland Fall Count: summary.

	AL	WA	CA	HO	BA	PG	CT	TA	DO	CN	WI	SO	Total
Total Species	86	66	112	125	52	127	136	116	149	104	75	54	195
Total Birds	2,757	1,756	5,995	15,248	886	10,714	6,885	4,808	10,393	6,788	1,968	1,236	69,434
Start Time	0635	0730	0516	0505	0757	0630	0526	0356	0400	0430	0700	0630	0356
Stop Time	1903	1600	2047	2000	1925	2002	1947	2230	1900	0000	2030	1730	2230
Parties	8	5	11	50	3	18	13	12	10	12	2	3	147
Observers	10	8	21	70	8	24	15	22	19	20	4	4	225
Hours Driving	8.5	13.8	20.5	46.1		5.2	3.1	1.9	34.0	24.3	2.0	7.8	167.2
Miles Driving	91.0	107.0	239.6	542.7		10.3	19.4	11.5	375.0	294.5	49.0	86.0	1,826.0
Hours Walking	18.9	11.0	47.9	193.5	14.6	32.1	51.7	45.0	33.0	35.3	12.8	1.3	497.1
Miles Walking	19.9	8.8	46.9	164.3	9.7	37.7	36.3	24.9	32.0	19.3	7.5	2.0	409.3
Hours Boat						3.0							3.0
Miles Boat						7.5							7.5
Hours Other							0.9			1.5			2.4
Miles Other							3.3			1.0			4.3
Stationary Hours	7.2		2.0	9.9	9.5	2.2	10.7			12.0		1.0	54.5
Feeder Hours			10.4	7.3				7.0		19.0		1.5	45.2
Hours Owling			1.8	2.4			0.6	4.5	5.0	10.5	1.0	0.5	26.3
Miles Owling			0.3	2.5			0.1	4.0	62.0	5.0	28.0		101.9

There were two write-in species reported. An immature White Ibis that had been present since late August was relocated in Talbot by Jim and Alicia Bachman and Vincent De Sanctis. This species had been reported in two of the prior nine counts. A second write-in was a Lark Sparrow found by Jeremy Rehm in Prince George's. Lark Sparrow had not occurred in the nine prior counts. Single individual species found during the count statewide included Northern Pintail (Prince George's), Greater Scaup (Prince George's), Black-billed Cuckoo (Carroll), Stilt Sandpiper (Dorchester), Baird's Sandpiper (Dorchester), Buff-breasted Sandpiper (Somerset), American Woodcock (Dorchester), Black-crowned Night-Heron (Calvert), Yellow-crowned Night-Heron (Calvert), Willow Flycatcher (Carroll), Hermit Thrush (Allegany), Swamp Sparrow (Howard), Blue-winged Warbler (Prince George's) (Table 3). The single Greater Scaup was the first time this species was found in the last ten counts.

The following highlights were noted by compilers and the author. There were only three species with new highs more than 50% above the high in the nine prior counts (ignoring new highs where a species was infrequent, i.e., observed less than 5 years). This is in part due to including last year where data were added from all counties, since it used eBird data for counties without organized counts. New highs were observed for Cattle Egret (new 245, prior 119) with the vast majority found in Talbot (242). Talbot also found all the Little Blue Heron on the count, setting a new high (new 23, prior 9). The third new high was Lesser Black-backed Gull (new 36, prior 6) with 35 of them found in Calvert.

Only three species exhibited new lows more than 25% less than the prior low in the previous nine counts. The most dramatic was a new low for Tree Swallow (new 282, prior 656). In contrast to the new high in Lesser Black-backed Gull, two gull species set new lows, namely Great Black-backed Gull (new 147, prior 252) and Laughing Gull (new 2,111, prior 2,830).

There were 35 species that were observed in only one county. Thirteen of these were observed in Dorchester County, with the rest being 5 in Prince George's, 4 in Carroll and Talbot, 3 in Allegany, 2 in Calvert and Howard, and 1 in Caroline and Somerset. Twenty species were reported in all 12 counties.

Thank you to all participants and especially the compilers. I urge more participants to enjoy the experience and join in one of the 2023 counts that will be held on 16 or 17 September. I hope additional counties will have volunteers who choose to organize a count in the future and reverse the trend of decreasing interest and participation in organized seasonal counts.

Table 3. 2022 Maryland Fall Count: observed species.

Species	AL	WA	CA	HO	BA	PG	CT	TA	DO	CN	WI	SO	Total
Canada Goose	508	46	413	1,420		789	415	428	555	544	7	155	5,280
Wood Duck	15	7	2	33	3	109	57	23	79	23			351
Blue-winged Teal						85			59				144
Northern Shoveler									3				3
Mallard	37		46	106		83	335	644	275	33		24	1,583
American Black Duck						37	1		12				50
Northern Pintail						1							1
Green-winged Teal						9	1		23				33
Greater Scaup						1							1
Hooded Merganser			2										2
Common Merganser	9												9
Ruddy Duck									6				6
unidentified duck						1							1
Northern Bobwhite										3			3
Wild Turkey		12		19		29	1	15	5	22	27		130
Pied-billed Grebe								4					4
Rock Pigeon	136	73	96	172	4	153		36	22	69		44	805
Mourning Dove	45	96	235	452	10	1,966	137	82	271	400	8	16	3,718
Yellow-billed Cuckoo	3	2	10	22		12	3	5	7	4	2		70
Black-billed Cuckoo			1										1
Common Nighthawk			2	3									5
Chimney Swift	134	20	53	416	1	420	86	1	5	208		16	1,360
Ruby-throated Hummingbird	16	7	20	42		9	31	28	16	28	4	3	204
King Rail									2				2
Clapper Rail									19				19
Virginia Rail							1		23				24
Sora						19	9		2				30
Common Gallinule									2				2
Black-bellied Plover									2				2
Killdeer	18		5	21		112	12	54	16	247			485
Semipalmated Plover							4		11				15
Stilt Sandpiper									1				1
Sanderling									3				3
Baird's Sandpiper									1				1
Least Sandpiper							4	58	69	15			146
White-rumped Sandpiper									3				3
Buff-breasted Sandpiper												1	1
Pectoral Sandpiper								4	15				19
Semipalmated Sandpiper								38	136	5			179
American Woodcock									1				1
Wilson's Snipe						2							2
Spotted Sandpiper				2			1		8				11
Solitary Sandpiper				1		1							2
Lesser Yellowlegs								23	16	2		3	44
Greater Yellowlegs							1	14	31			12	58
unidentified shorebird								1				2	3
Laughing Gull						449	543	67	608	50	163	231	2,111
Ring-billed Gull				1		111	158	19	138	184			611
Herring Gull							235	8	223	2	7	218	693
Lesser Black-backed Gull							35	1					36
Great Black-backed Gull							123		21		1	2	147

Species	AL	WA	CA	HO	BA	PG	CT	TA	DO	CN	WI	SO	Total
unidentified gull						50	200	11	52	35		9	357
Caspian Tern						3	16	3	6			11	39
Common Tern							3		1	9			13
Forster's Tern						95	327	30	301	9	123	59	944
Royal Tern							94	2	47		59	6	208
unidentified tern								3					3
Double-crested Cormorant			1	36		38	212	147	494	32	55	31	1,046
Brown Pelican									435				435
Great Blue Heron	2	1	16	43		24	32	30	44	17	8	6	223
Great Egret			5	1		11	1	48	48	1	1	11	127
Snowy Egret							66	31	28		1	13	139
Little Blue Heron								23					23
Tricolored Heron									4			3	7
Cattle Egret								242	3				245
Green Heron	2			13		3	1	10	5				34
Black-crowned Night-Heron							1						1
Yellow-crowned Night-Heron							1						1
White Ibis								1					1
Glossy Ibis								4					4
Black Vulture	5	4	26	107	1	98	65	19	11	158	9	6	509
Turkey Vulture	84	31	154	282	3	141	99	105	197	285	22	54	1,457
Osprey	1		2	6	14	7	32	22	18	5	6		113
Northern Harrier			2	1	1	5		1	5	1		1	17
Sharp-shinned Hawk	1	12	1	7	37	1		2	7	2			70
Cooper's Hawk	1	1	2	19	7	8	4	3	8	8			61
unidentified *Accipiter*			1	1	1				1	1	1		6
Bald Eagle	1	2	5	12	5	15	51	46	85	30	6	5	263
Red-shouldered Hawk	3	5	29	97	1	35	18	3	10	14			215
Broad-winged Hawk	8		435	823	472				1				1,739
Red-tailed Hawk	7	4	26	19		13	6	3	8	10	1		97
unidentified *Buteo*		1	8										9
Eastern Screech-Owl			4	2		2	6	19	42	5	3		83
Great Horned Owl	1		2	6		1	5	9	22	6			52
Barred Owl			6	8		1	10		2	6			33
Belted Kingfisher	8	3	18	30	1	10	16	5	11	8	1	2	113
Red-headed Woodpecker		1	2	3		3	5		32		4		50
Red-bellied Woodpecker	44	47	102	267	9	75	90	40	27	61	11	2	775
Yellow-bellied Sapsucker	1			1		1				2			5
Downy Woodpecker	19	17	70	197	4	42	70	37	52	31	6	2	547
Hairy Woodpecker	11	1	21	49		13	16	3	21	8	1		144
Downy/Hairy Woodpecker								2					2
Northern Flicker	9	12	48	117	12	48	23	31	59	17	2	1	379
Pileated Woodpecker	22	16	18	64	1	22	27	16	27	32	4	1	250
American Kestrel			2	20	15	28	7	4	21	26	7		130
Merlin	1			3		1			1		1		7
Peregrine Falcon			3	1		1	1						6
Great Crested Flycatcher		2	4	9			4	2	8	5	3		37
Eastern Kingbird				1		1	4		1		2		9
Olive-sided Flycatcher	1					1							2
Eastern Wood-Pewee	10	9	39	105	1	47	64	10	29	20	1		335
Yellow-bellied Flycatcher							1		4				5
Acadian Flycatcher		1	7	8		3	19		1	2	1		42
Willow Flycatcher			1										1

Species	AL	WA	CA	HO	BA	PG	CT	TA	DO	CN	WI	SO	Total
Traill's Flycatcher				1					1				2
Least Flycatcher	1		5	1		2	2	1	1				13
unidentified *Empidonax*		3	5	20	1	7		1	4	5			46
Eastern Phoebe	18	12	20	73	2	18	26		1	7	1	2	180
White-eyed Vireo	1		24	15		15	46	7	40	6	2		156
Yellow-throated Vireo	2	6	6	9		6	11	1	1				42
Blue-headed Vireo	1		3	4		1	1						10
Philadelphia Vireo				2		1	1			1			5
Warbling Vireo			6	5	1	1	1						14
Red-eyed Vireo	6	9	28	101	2	37	111	18	24	18	3		357
Blue Jay	119	109	391	862	17	132	104	183	148	105	20	25	2,215
American Crow	88	87	211	589	27	304	136	120	161	167	26	14	1,930
Fish Crow	50	6	34	258		12	70	10	6	9		7	462
unidentified crow				525		5	9	60	17		10	6	632
Common Raven	12	8	4	6	1	7							38
Carolina Chickadee		46	120	274	8	93	151	135	147	118	28	7	1,127
Black-capped Chickadee	42	1											43
Tufted Titmouse	38	43	91	239	6	75	178	92	75	80	21	1	939
Horned Lark			1	2					1	41			45
Tree Swallow		10		24		38		18		189	3		282
N. Rough-winged Swallow		33				5							38
Barn Swallow			11				1						12
unidentified swallow										31			31
Ruby-crowned Kinglet			1	4		1	2	1	2			1	12
Cedar Waxwing	361	84	29	93		68	6	10	4	7			662
Red-breasted Nuthatch	2	2	4	10	1	4	16	41	29	8	4		121
White-breasted Nuthatch	37	27	119	248	6	39	64	33	9	23		1	606
Brown-headed Nuthatch							6	30	115		7		158
Brown Creeper	1						1			2			4
Blue-gray Gnatcatcher			8	23		3	8	8	26		3		79
Carolina Wren	64	68	160	489	12	188	207	154	105	106	35	10	1,598
House Wren	1		10	44		16	26	17	23	2	3		142
Winter Wren				1						3			4
Marsh Wren				1		3	2		9				15
Gray Catbird	32	17	349	527	5	91	61	32	80	20	12	1	1,227
Brown Thrasher	4	5	12	26		27	32	14	19	7	4	1	151
Northern Mockingbird	7	17	67	185	1	107	47	35	32	77	19	24	618
European Starling	242	128	534	1355	41	1,167	231	365	678	695	217	92	5,745
Eastern Bluebird	23	30	128	373	1	108	116	86	70	126	1	7	1,069
Veery			43	10		6	11	5	7				82
Gray-cheeked Thrush				2		2	2		1				7
Swainson's Thrush	3	4	208	25	1	3	10		7		1		262
Hermit Thrush	1												1
Wood Thrush	1		48	19		8	9	5	2	3			95
American Robin	88	18	265	644	36	338	11	28	120	165	1		1,714
House Sparrow	53	37	130	340	35	47	107	17	18	128		16	928
House Finch	52	12	102	177	1	25	51	45	11	34	7	6	523
Purple Finch			12										12
American Goldfinch	91	102	120	447	43	128	119	58	37	125	36	5	1,311
Grasshopper Sparrow				1						1			2
Lark Sparrow						1							1
Chipping Sparrow	12	25	80	137	9	59	33	71	90	119	12		647
Field Sparrow	6	10	7	22		5	6	7	12	11			86

Species	AL	WA	CA	HO	BA	PG	CT	TA	DO	CN	WI	SO	Total
Seaside Sparrow									3				3
Savannah Sparrow				1		3	1	3	9	3		30	50
Song Sparrow	18	2	29	48	2	17	19	7	1	3		1	147
Lincoln's Sparrow			2				1						3
Swamp Sparrow				1									1
unidentified sparrow		7		20								5	32
Eastern Towhee	3	4	40	83		9	13	1	5	4			162
Yellow-breasted Chat			1	2			1						4
Bobolink	1						6	40	163	12	7		229
Eastern Meadowlark				5		4		1	1	3		1	15
Baltimore Oriole	3	1	1			2		2	2				11
Red-winged Blackbird	1			61		1,000	99	97	1,089	182	351		2,880
Brown-headed Cowbird		81	102	319		219		17	951	746	301		2,736
Common Grackle	2			72		329	4	11	110	92	200		820
unidentified blackbird		200				300			500	300			1,300
Ovenbird	1		3	9		4	12	1	3	1	1		35
Worm-eating Warbler			1			1	2	2	1				7
Northern Waterthrush						1	11		3				15
Golden-winged Warbler							1					1	2
Blue-winged Warbler						1							1
Black-and-white Warbler			14	59		16	84	28	37	25	5		268
Tennessee Warbler			9	12		2	7		1				31
Nashville Warbler			2	2	1	3	2	1	1				12
Mourning Warbler	1												1
Kentucky Warbler				1									1
Common Yellowthroat	6		31	77	3	35	119	78	98	10	7	6	470
Hooded Warbler	1						9	1					11
American Redstart	3	1	13	98	3	24	89	46	84	33	7		401
Cape May Warbler	2		4	9		2	17	2	3	5			44
Northern Parula		1	5	41	1	18	107	14	41	23	8		259
Magnolia Warbler			22	79	1	20	30	12	11	9	1		185
Bay-breasted Warbler	1		8	14		5	5						33
Blackburnian Warbler		1	1	11	1	5	2	1		1			23
Yellow Warbler				2			7		7	1	4		21
Chestnut-sided Warbler	3		2	24	1	3	13	4	1	3			54
Blackpoll Warbler			3	6		1	3		1				14
Black-throated Blue Warbler	1		5	9			10	6	3	2	1		37
Palm Warbler			1	10	1	5	7		15	2	1		42
Pine Warbler		4	1	3		8	21	26	78	14	11		166
Yellow-rumped Warbler	1		1	16				2		2		6	28
Yellow-throated Warbler						2	3						5
Prairie Warbler			1	5			1	2	3				12
Black-throated Green Warbler	3	3	17	55		9	6	2	7	1			103
Canada Warbler	1		3	4			2	1					11
Wilson's Warbler				1			1		1				3
unidentified warbler			6	6		2	29	1					44
Summer Tanager						5	20	4	18	2	3		52
Scarlet Tanager	5	2	8	12		13	8	3	6	4			61
Northern Cardinal	70	54	287	685	11	152	215	127	82	137	24	10	1,854
Rose-breasted Grosbeak	3	3	24	22	1	7	4	2	1				67
Blue Grosbeak				12		19	15	29	37	42	1		155
Indigo Bunting	5		7	71		20	57	6	15	2	1		184
Total Birds													69,434

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Turkey Point Fall Migration Count: 2022 Season Report

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Abstract: The Maryland Biodiversity Project conducted the second year of the Turkey Point Fall Migration Count in 2022 from 1 August through 30 November. This avian count aims to document population trends and determine species diversity through annual fall monitoring. With each passing season, the collected data become more valuable for assessing trends and correlations between dynamic variables such as weather and climate. Migratory birds are affected by environmental changes and by specific challenges at each stage of their migrations. The Turkey Point Fall Migration Count provides important quantitative insights into regional bird populations and the nature of their migrations (e.g., relative abundance, timing, and weather impacts). The value is compounded when compared to the results of the Cape May Bird Observatory Morning Flight Count and the new Dans Rock Fall Migration Count in Allegany County, Maryland. During the 2022 season, the Count documented 297,912 individuals of 196 species in southbound migration. A few highlights during the season included 4 Northern Goshawks and an incredible irruption of Red-bellied Woodpeckers which set the all-time high-count for the species' entire range.

Fall 2022 marked the second consecutive season of the Maryland Biodiversity Project's (MBP) avian monitoring at Turkey Point, Cecil County, Maryland. Turkey Point is located at the southern tip of a 20-mi (32-km) peninsula that projects out into the northern reaches of the Chesapeake Bay in the northeast corner of the state. Because of its unique geography, birds are concentrated at the Point and many strong passerine morning flights have been documented at this location, making it a top location to view the spectacle of morning flight in Maryland. After a successful and productive season in 2021 that showcased impressive flights and notable rarities, continuing the count to further our knowledge of migration in the Chesapeake Bay region was an easy decision. The focus of this count is to document passerines moving past Turkey Point in morning flight, however all birds observed actively migrating during the count period such as hawks and many species of waterfowl were also noted.

METHODS

Methods were consistent with those reported in the Turkey Point Fall Migration Count: 2021 Season Report (Irons 2023). However, the count was extended by 15 days through the end of November, in order to understand the movements of late-season migrants such as robins, waxwings, finches, and many species of waterfowl. Each morning the count began 15 minutes before sunrise and ran for

a minimum of three hours after sunrise. On days with increased migratory activity, the count was extended until migration activity ceased. Daily counts ended early or were suspended for continuous heavy rain that prevented flights. Migration data were collected and entered in the field using the Dutch software Trektellen (Trektellen 2023g), allowing the live stream of sightings to MBP's count page (Maryland Biodiversity Project 2022b) and to the Trektellen website. Flight direction, age and sex data (for species with dimorphic plumage), and time were recorded with each entry into the database. Daily reports were also filed with Cornell University's eBird application (eBird 2023a). Alternative counters covered the migration monitoring when the lead counter had the day off. All alternate counters had years of birding experience and were trained in monitoring protocols by the lead counter.

RESULTS

Between 1 August and 30 November 2022, the Turkey Point Fall Migration Count tallied 297,912 birds representing 196 species (Table 1). The count logged 445 hours during the 120 days of the count period, missing just one day in September due to inclement weather. As expected, August brought the fewest individuals with 17,000 individuals counted. A slight increase was noted in September when 26,000 were counted, followed by 64,000 in October. November brought more individuals than the three previous months combined with 190,000 individuals counted. During that month, 124,000 Common Grackles were counted. Without that species, October and November would have similar counts. Species totals were 120 in August, 133 in September, 133 in October, and 111 in November. Below are monthly summaries broken down into sections of several days that include highlights, notable movements, and new arrivals along with weather conditions.

Table. 1 2022 Turkey Point Fall Migration Count Results.

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Snow Goose	0	0	0	104	104	100 (12 Nov)	12 Nov	30 Nov
Brant	0	0	8	0	0	8 (28 Oct)	28 Oct	28 Oct
Cackling Goose	0	0	5	5	10	4 (14 Oct)	3 Oct	9 Nov
Canada Goose	0	274	1,824	2,041	4,139	463 (8 Nov)	21 Sep	29 Nov
Mute Swan	2	4	1	0	7	4 (15 Sep)	30 Aug	19 Oct
Tundra Swan	0	0	0	1,937	1,937	524 (19 Nov)	7 Nov	30 Nov
Wood Duck	2	5	18	3	28	7 (17 Oct)	15 Aug	3 Nov
Blue-winged Teal	7	2	0	0	9	7 (31 Aug)	31 Aug	16 Sep
Northern Shoveler	0	0	4	3	7	4 (17 Oct)	17 Oct	7 Nov
Gadwall	0	0	20	184	204	44 (7 Nov)	9 Oct	29 Nov
American Wigeon	0	1	77	103	181	34 (19 Nov)	21 Sep	26 Nov
Mallard	18	14	53	355	440	60 (21 Nov)	3 Aug	24 Nov
America Black Duck	0	8	102	187	297	51 (28 Oct)	7 Sep	30 Nov
Northern Pintail	0	8	46	222	276	79 (2 Nov)	21 Sep	29 Nov
Green-winged Teal	0	2	10	24	36	11 (7 Nov)	15 Sep	19 Nov
Canvasback	0	0	0	190	190	141 (23 Nov)	8 Nov	26 Nov
Redhead	0	0	5	19	24	11 (8 Nov)	21 Oct	23 Nov

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Ring-necked Duck	0	0	25	375	400	153 (8 Nov)	28 Oct	25 Nov
Greater Scaup	0	0	15	66	81	19 (19 Nov)	27 Oct	26 Nov
Lesser Scaup	0	1	24	91	116	45 (29 Nov)	16 Sep	29 Nov
scaup sp.	0	0	14	714	728	311 (21 Nov)	28 Oct	29 Nov
Aythya sp.	0	0	3	149	152	60 (8 Nov)	21 Oct	28 Nov
Surf Scoter	0	0	1	10	11	5 (7 Nov)	16 Oct	22 Nov
White-winged Scoter	0	0	0	1	1	1 (23 Nov)	23 Nov	23 Nov
Black Scoter	0	0	2	2	4	2 (30 Oct)	30 Oct	6 Nov
scoter sp.	0	0	6	7	13	7 (25 Nov)	30 Oct	25 Nov
Surf/Black Scoter	0	0	0	1	1	1 (7 Nov)	7 Nov	7 Nov
Bufflehead	0	0	0	426	426	166 (7 Nov)	2 Nov	26 Nov
Common Goldeneye	0	0	0	2	2	2 (30 Nov)	30 Nov	30 Nov
Hooded Merganser	0	0	0	11	11	4 (18 Nov)	8 Nov	24 Nov
Red-breasted Merganser	0	0	0	11	11	4 (21 Nov)	21 Nov	29 Nov
Ruddy Duck	0	0	15	139	154	117 (23 Nov)	9 Oct	29 Nov
duck sp.	0	0	96	161	257	43 (7 Nov)	1 Oct	28 Nov
Horned Grebe	0	0	0	10	10	6 (2 Nov)	2 Nov	22 Nov
Red-necked Grebe	0	0	0	3	3	3 (3 Nov)	3 Nov	3 Nov
Rock Pigeon	6	11	0	0	17	9 (15 Sep)	17 Aug	19 Sep
Mourning Dove	42	4	12	5	63	9 (25 Aug)	1 Aug	6 Nov
Yellow-billed Cuckoo	2	0	0	0	2	1 (2 Aug)	2 Aug	10 Aug
Chimney Swift	983	1,701	502	0	3,186	315 (16 Sep)	1 Aug	22 Oct
Ruby-throated Hummingbird	45	63	3	0	111	10 (22 Sep)	1 Aug	9 Oct
American Coot	0	0	57	0	57	57 (16 Oct)	16 Oct	16 Oct
Killdeer	7	0	8	0	15	6 (8 Oct)	4 Aug	10 Oct
Semipalmated Plover	0	1	0	0	1	1 (15 Sep)	15 Sep	15 Sep
Dunlin	0	0	1	0	1	1 (20 Oct)	20 Oct	20 Oct
Least Sandpiper	9	0	0	0	9	9 (14 Aug)	14 Aug	14 Aug
Pectoral Sandpiper	6	4	0	0	10	6 (19 Aug)	19 Aug	30 Sep
Semipalmated Sandpiper	11	0	0	0	11	9 (24 Aug)	14 Aug	24 Aug
Spotted Sandpiper	1	0	0	0	1	1 (19 Aug)	19 Aug	19 Aug
Solitary Sandpiper	0	1	0	0	1	1 (18 Sep)	18 Sep	18 Sep
Lesser Yellowlegs	5	5	0	0	10	5 (20 Aug)	20 Aug	9 Sep
Greater Yellowlegs	0	1	1	0	2	1 (12 Sep)	12 Sep	18 Oct
Red-necked Phalarope	1	0	0	0	1	1 (28 Aug)	28 Aug	28 Aug
shorebird sp.	0	6	0	0	6	6 (15 Sep)	15 Sep	15 Sep
peep sp.	11	20	0	0	31	10 (2 Sep)	5 Aug	15 Sep
Bonaparte's Gull	6	0	5	320	331	68 (20 Nov)	19 Aug	28 Nov
Laughing Gull	80	173	821	1367	2,441	211 (7 Nov)	6 Aug	29 Nov
Franklin's Gull	0	0	1	0	1	1 (3 Oct)	3 Oct	3 Oct
Ring-billed Gull	160	75	234	3,668	4,137	705 (30 Nov)	2 Aug	30 Nov
Herring Gull	4	15	177	153	349	62 (2 Oct)	13 Aug	30 Nov
Lesser Black-backed Gull	0	0	0	1	1	1 (14 Nov)	14 Nov	14 Nov
Great Black-backed Gull	1	10	25	94	130	9 (18 Nov)	25 Aug	29 Nov
Least Tern	8	0	0	0	8	7 (8 Aug)	5 Aug	8 Aug
Caspian Tern	192	114	53	0	359	20 (14 Aug)	1 Aug	31 Oct
Black Tern	7	2	0	0	9	4 (23 Aug)	22 Aug	8 Sep
Forster's Tern	43	254	1,864	781	2,942	601 (19 Oct)	17 Aug	21 Nov
Royal Tern	0	1	1	0	2	1 (19 Sep)	19 Sep	6 Oct
Red-throated Loon	0	0	1	2	3	1 (29 Oct)	29 Oct	27 Nov
Common Loon	1	0	29	57	87	10 (8 Nov)	10 Aug	29 Nov
Brown Booby	0	2	0	0	2	1 (15 Sep)	15 Sep	16 Sep
Double-crested Cormorant	298	240	1,751	1,735	4,024	538 (28 Oct)	1 Aug	30 Nov
Great Blue Heron	8	8	2	3	21	2 (2 Aug)	2 Aug	29 Nov
Great Egret	6	4	0	1	11	3 (3 Sep)	1 Aug	10 Nov
Snowy Egret	5	0	0	0	5	5 (14 Aug)	14 Aug	14 Aug
Little Blue Heron	6	8	1	0	15	4 (Aug)	8 Aug	21 Oct
Egretta sp.	0	3	0	0	3	3 (3 Sep)	3 Sep	3 Sep
Cattle Egret	8	1	0	0	9	8 (25 Aug)	25 Aug	2 Sep
Green Heron	20	2	0	0	22	4 (4 Aug)	1 Aug	17 Sep

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
White Ibis	1	0	0	0	1	1 (8 Aug)	8 Aug	8 Aug
Black Vulture	0	1	6	22	29	8 (9 Nov)	29 Sep	17 Nov
Turkey Vulture	0	17	912	390	1,319	322 (23 Oct)	11 Sep	28 Nov
Osprey	21	54	11	0	86	11 (8 Sep)	10 Aug	22 Oct
Golden Eagle	0	0	0	3	3	1 (2 Nov)	2 Nov	9 Nov
Northern Harrier	2	5	19	13	39	3 (5 Oct)	27 Aug	26 Nov
Sharp-shinned Hawk	0	284	468	46	798	92 (19 Oct)	13 Sep	30 Nov
Cooper's Hawk	4	71	166	22	263	24 (29 Sep)	18 Aug	26 Nov
Northern Goshawk	0	0	2	2	4	1 (9 Oct)	9 Oct	17 Nov
Accipiter sp.	0	1	3	0	4	3 (7 Oct)	17 Sep	7 Oct
Bald Eagle	5	21	45	68	139	18 (8 Nov)	13 Aug	28 Nov
Red-shouldered Hawk	0	1	86	95	182	38 (9 Nov)	29 Sep	23 Nov
Broad-winged Hawk	0	176	61	0	237	110 (15 Sep)	2 Sep	21 Oct
Red-tailed Hawk	0	9	144	154	307	61 (28 Oct)	8 Sep	29 Nov
Belted Kingfisher	1	1	3	20	25	4 (3 Nov)	31 Aug	29 Nov
Red-headed Woodpecker	0	70	19	2	91	10 (14 Sep)	1 Sep	9 Nov
Red-bellied Woodpecker	5	823	2,849	80	3757	641 (10 Oct)	10 Aug	30 Nov
Yellow-bellied Sapsucker	0	8	100	4	112	18 (10 Oct)	25 Sep	30 Nov
Downy Woodpecker	2	32	109	27	170	14 (10 Oct)	16 Aug	29 Nov
Hairy Woodpecker	18	12	43	10	83	7 (10 Oct)	10 Aug	29 Nov
Northern Flicker	33	433	969	77	1,512	160 (6 Oct)	3 Aug	30 Nov
Pileated Woodpecker	13	2	1	1	17	2 (3 Aug)	2 Aug	10 Nov
American Kestrel	1	27	46	1	75	13 (15 Oct)	24 Aug	4 Nov
Merlin	1	50	61	18	130	7 (14 Sep)	29 Aug	21 Nov
Peregrine Falcon	2	8	10	2	22	2 (15 Oct)	12 Aug	4 Nov
Great Crested Flycatcher	7	1	0	0	8	2 (13 Aug)	12 Aug	10 Sep
Eastern Kingbird	365	51	0	0	416	37 (24 Aug)	1 Aug	21 Sep
Eastern Wood-Pewee	29	29	1	0	59	5 (25 Aug)	2 Aug	1 Oct
Traill's Flycatcher	4	3	2	0	9	1 (2 Aug)	2 Aug	3 Oct
Least Flycatcher	2	0	0	0	2	1 (10 Aug)	10 Aug	27 Aug
Empidonax sp.	0	1	0	0	1	1 (8 Sep)	8 Sep	8 Sep
Eastern Phoebe	13	27	31	1	72	7 (30 Sep)	3 Aug	2 Nov
White-eyed Vireo	2	2	0	0	4	2 (25 Aug)	25 Aug	17 Sep
Blue-headed Vireo	0	1	10	0	11	3 (15 Oct)	29 Sep	27 Oct
Philadelphia Vireo	0	2	1	0	3	1 (14 Sep)	14 Sep	28 Oct
Warbling Vireo	5	5	0	0	10	4 (10 Sep)	16 Aug	15 Sep
Red-eyed Vireo	35	141	7	0	183	26 (16 Sep)	2 Aug	27 Oct
Blue Jay	66	6,589	11,743	64	18,462	2,284 (8 Oct)	3 Aug	15 Nov
American Crow	0	3	24	12	39	8 (23 Oct)	25 Sep	24 Nov
Fish Crow	161	20	16	135	332	139 (14 Aug)	9 Aug	27 Nov
Common Raven	3	2	0	10	15	2 (20 Sep)	6 Aug	23 Nov
Tufted Titmouse	0	0	88	8	96	25 (21 Oct)	10 Oct	23 Nov
Horned Lark	2	0	1	8	11	2 (14 Aug)	14 Aug	29 Nov
Bank Swallow	2,092	197	0	0	2,289	635 (1 Aug)	1 Aug	5 Sep
Tree Swallow	104	2,646	2,074	9	4,833	1,028 (22 Sep)	1 Aug	9 Nov
Northern Rough-winged Swallow	34	70	64	3	171	16 (11 Sep)	1 Aug	9 Nov
Purple Martin	4,877	698	0	0	5,575	1,468 (18 Aug)	1 Aug	16 Sep
Barn Swallow	891	300	3	0	1,194	173 (25 Aug)	1 Aug	12 Oct
Cliff Swallow	2	0	0	0	2	1 (17 Aug)	17 Aug	27 Aug
swallow sp.	0	8	0	0	8	8 (17 Sep)	17 Sep	17 Sep
Ruby-crowned Kinglet	0	1	65	17	83	6 (6 Oct)	29 Sep	29 Nov
Golden-crowned Kinglet	0	1	34	17	52	12 (8 Nov)	29 Sep	26 Nov
Cedar Waxwing	1,073	2,456	1,367	9,789	14,685	12,84 (7 Nov)	1 Aug	30 Nov
Red-breasted Nuthatch	24	180	209	28	441	34 (6 Oct)	6 Aug	23 Nov
White-breasted Nuthatch	6	36	1,038	42	1,122	122 (18 Oct)	3 Aug	14 Nov
Blue-gray Gnatcatcher	1,139	774	5	0	1,918	172 (12 Aug)	2 Aug	21 Oct
House Wren	2	3	0	0	5	2 (17 Sep)	4 Aug	17 Sep
Winter Wren	0	0	0	4	4	1 (2 Nov)	2 Nov	27 Nov
Gray Catbird	1	3	0	0	4	3 (17 Sep)	25 Aug	17 Sep
Brown Thrasher	0	1	0	0	1	1 (16 Sep)	16 Sep	16 Sep

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Northern Mockingbird	5	5	10	2	22	3 (10 Oct)	8 Aug	21 Nov
European Starling	102	43	362	629	1,136	174 (3 Nov)	2 Aug	24 Nov
Eastern Bluebird	5	2	424	770	1,201	153 (27 Oct)	2 Aug	30 Nov
Veery	25	3	0	0	28	25 (28 Aug)	28 Aug	16 Sep
Hermit Thrush	0	0	1	1	2	1 (30 Oct)	30 Oct	10 Nov
Wood Thrush	0	1	0	0	1	1 (10 Sep)	10 Sep	10 Sep
American Robin	256	36	8,408	16,326	25,026	3,545 (24 Oct)	1 Aug	30 Nov
House Sparrow	55	46	63	32	196	18 (17 Aug)	3 Aug	22 Nov
American Pipit	0	2	25	56	83	11 (8 Nov)	26 Sep	29 Nov
Evening Grosbeak	0	0	1	4	5	2 (27 Nov)	30 Oct	27 Nov
House Finch	33	17	2,393	1,171	3,614	565 (22 Oct)	2 Aug	30 Nov
Purple Finch	0	43	922	534	1,499	149 (31 Oct)	21 Sep	30 Nov
Red Crossbill	0	0	0	13	13	7 (18 Nov)	4 Nov	18 Nov
Pine Siskin	0	0	45	163	208	37 (4 Nov)	9 Oct	30 Nov
American Goldfinch	113	888	4,642	9,374	15,017	1,634 (11 Nov)	3 Aug	30 Nov
Lapland Longspur	0	0	0	1	1	1 (26 Nov)	26 Nov	26 Nov
Chipping Sparrow	14	9	94	29	146	23 (22 Oct)	1 Aug	26 Nov
Field Sparrow	1	0	4	4	9	2 (26 Oct)	5 Aug	23 Nov
Dark-eyed Junco	0	0	21	118	139	42 (4 Nov)	12 Oct	30 Nov
White-throated Sparrow	0	0	10	1	11	7 (12 Oct)	7 Oct	20 Nov
Savannah Sparrow	0	8	15	5	28	4 (21 Oct)	9 Sep	9 Nov
Song Sparrow	0	0	16	5	21	7 (30 Oct)	3 Oct	19 Nov
Lincoln's Sparrow	0	0	1	0	1	1 (3 Oct)	3 Oct	3 Oct
Swamp Sparrow	0	0	3	0	3	1 (3 Oct)	3 Oct	28 Oct
Eastern Towhee	1	0	0	0	1	1 (3 Aug)	3 Aug	3 Aug
Bobolink	218	357	4	0	579	66 (8 Sep)	8 Aug	6 Oct
Eastern Meadowlark	0	0	57	18	75	18 (18 Oct)	8 Oct	29 Nov
Orchard Oriole	370	10	0	0	380	38 (19 Aug)	1 Aug	19 Sep
Baltimore Oriole	195	34	5	7	241	54 (29 Aug)	3 Aug	23 Nov
Red-winged Blackbird	1,728	1,138	2,727	9,039	14,632	1,116 (10 Nov)	1 Aug	30 Nov
Brown-headed Cowbird	138	38	59	279	514	77 (13 Aug)	2 Aug	29 Nov
Rusty Blackbird	0	3	55	157	215	64 (23 Nov)	29 Sep	29 Nov
Common Grackle	13	2	3,598	124,568	128,181	36,200 (2 Nov)	12 Aug	30 Nov
blackbird sp.	0	0	2	0	2	2 (30 Oct)	30 Oct	30 Oct
Ovenbird	1	0	0	0	1	1 (27 Aug)	27 Aug	27 Aug
Worm-eating Warbler	4	2	0	0	6	2 (10 Aug)	10 Aug	9 Sep
Louisiana Waterthrush	2	0	0	0	2	1 (2 Aug)	2 Aug	17 Aug
Northern Waterthrush	60	68	0	0	128	22 (2 Sep)	2 Aug	30 Sep
Louisiana/Northern Waterthrush	6	0	0	0	6	2 (10 Aug)	10 Aug	17 Aug
Golden-winged Warbler	0	1	0	0	1	1 (9 Sep)	9 Sep	9 Sep
Blue-winged Warbler	3	1	0	0	4	1 (18 Aug)	18 Aug	16 Sep
Black-and-white Warbler	24	47	4	0	75	12 (2 Sep)	11 Aug	3 Oct
Prothonotary Warbler	3	0	0	0	3	2 (2 Aug)	2 Aug	4 Aug
Tennessee Warbler	19	214	92	0	325	41 (24 Sep)	4 Aug	27 Oct
Orange-crowned Warbler	0	0	0	1	1	1 (8 Nov)	8 Nov	8 Nov
Nashville Warbler	1	13	24	0	38	5 (29 Sep)	2 Aug	27 Oct
Connecticut Warbler	0	0	1	0	1	1 (8 Oct)	8 Oct	8 Oct
Common Yellowthroat	2	9	6	0	17	2 (10 Sep)	11 Aug	24 Oct
American Redstart	85	287	2	0	374	82 (9 Sep)	2 Aug	14 Oct
Cape May Warbler	52	1,164	340	2	1,558	201 (16 Sep)	17 Aug	6 Nov
Northern Parula	29	231	45	0	305	31 (16 Sep)	1 Aug	30 Oct
Magnolia Warbler	6	53	2	0	61	12 (17 Sep)	13 Aug	8 Oct
Bay-breasted Warbler	1	39	0	0	40	6 (16 Sep)	25 Aug	30 Sep
Bay-breasted/Blackpoll Warbler	0	16	1	0	17	6 (21 Sep)	5 Sep	3 Oct
Blackburnian Warbler	24	28	6	0	58	9 (8 Sep)	16 Aug	8 Oct
Yellow Warbler	113	16	1	0	130	24 (2 Aug)	1 Aug	6 Oct
Chestnut-sided Warbler	10	13	1	0	24	3 (25 Aug)	18 Aug	7 Oct
Blackpoll Warbler	0	339	394	5	738	62 (29 Sep)	10 Sep	5 Nov
Black-throated Blue Warbler	1	37	11	0	49	8 (9 Sep)	29 Aug	19 Oct
Palm Warbler	0	99	423	32	554	60 (15 Oct)	10 Sep	23 Nov

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Pine Warbler	1	14	12	2	29	5 (29 Sep)	8 Aug	23 Nov
Yellow-rumped Warbler	6	247	6,698	285	7,236	2,026 (24 Oct)	12 Aug	30 Nov
Yellow-throated Warbler	1	0	0	0	1	1 (4 Aug)	4 Aug	4 Aug
Prairie Warbler	2	10	1	0	13	3 (2 Sep)	17 Aug	22 Oct
Black-throated Green Warbler	2	101	20	0	123	26 (28 Sep)	25 Aug	24 Oct
Canada Warbler	1	1	0	0	2	1 (20 Aug)	20 Aug	10 Sep
warbler sp.	86	693	1,225	1	2,005	800 (15 Oct)	2 Aug	3 Nov
Summer Tanager	0	2	0	0	2	1 (4 Sep)	4 Sep	19 Sep
Scarlet Tanager	12	124	12	0	148	19 (14 Sep)	1 Aug	15 Oct
Northern Cardinal	0	0	0	6	6	4 (23 Nov)	8 Nov	23 Nov
Rose-breasted Grosbeak	1	82	4	0	87	21 (21 Sep)	25 Aug	7 Oct
Blue Grosbeak	16	15	1	1	33	5 (3 Sep)	18 Aug	14 Nov
Indigo Bunting	66	93	48	0	207	17 (29 Sep)	1 Aug	27 Oct
Dickcissel	2	6	9	2	19	3 (21 Oct)	23 Aug	19 Nov
passerine sp.	5	0	0	0	5	5 (6 Aug)	6 Aug	6 Aug

MONTHLY SUMMARIES

August

The first day of the season began cloudy and misty. Although diversity was low, it brought a strong flight of 635 Bank Swallows and 448 Purple Martins. That system cleared out nicely, leading to an impressive flight the following day. Although relatively warm and with south-southwest winds, seven species of warblers were counted, including an early Nashville Warbler, 2 Prothonotary Warblers, 2 Northern Parulas, and 24 Yellow Warblers. A count of 23 Orchard Orioles was also noteworthy. The next two days were clear and warm with light north or east winds and were marked by high diversity. The season's first Tennessee Warbler was a highlight. Moderate south winds and warm temps took hold on 4 AUG and persisted for another five days. Both Red-breasted Nuthatches and White-breasted Nuthatches arrived, marking the beginning of their southward irruption. The season's first rarity came on 8 AUG with an immature White Ibis heading northeast up the Elk River. Although the days remained warm, the winds switched to the northwest on 10 AUG and brought an uptick in Blue-gray Gnatcatchers (55 counted) and a Common Loon moving over the Point. Orchard Orioles continued in good numbers with 37 on these same northwest winds. Baltimore Orioles showed an increase with 21 individuals counted. A strong front blew through two days later on 12 AUG, bringing 172 Blue-gray Gnatcatchers and the first Yellow-rumped "Myrtle" Warbler. The season's first Magnolia Warbler was noted on 13 AUG with the clear, calm, and cool conditions that followed the front. A small front on 16 and 17 AUG brought a nice influx of warblers with the season's first Blackburnian Warbler on 16 AUG and the first Cape May Warbler along with 10 other warbler species and a Cliff Swallow on 17 AUG. A light northwest wind and clear and cool conditions the next day brought an incredible flight of Purple Martins with 1,468 counted. This was rather unexpected as there had been many days with the same conditions and very few Purple Martins noted. Conditions the following day were similar and netted another 433 Purple Martins. On 19

AUG, the first Bonaparte's Gull and another good flight of orioles (32 Baltimore and 38 Orchard) were observed. The next three days were dominated by light winds from the south and east, which did not bring much new besides the season's first Canada Warbler on 20 AUG and 3 Black Terns on 22 AUG. The winds finally switched on 23 AUG and brought down a few warblers, the season's first Dickcissel, and four more Black Terns. Light north winds and clear conditions continued for the next few days and brought several new species to the Point. These included the first Chestnut-sided Warbler and Black-throated Green Warbler on 24 AUG, as well as Bay-breasted Warbler and Rose-breasted Grosbeak on 25 AUG. The swallow flight on 25 AUG was impressive with 340 Purple Martins, 173 Barn Swallows as well as 158 Chimney Swifts. The conditions perfectly matched those of 18 AUG: dead calm, clear and cool. The last few days of the month were fairly quiet. Foggy conditions on 28 AUG brought a disoriented Red-necked Phalarope over the Point. A nice flight of Baltimore Orioles was noted on 29 AUG with a total of 54 counted.

September

The month began with moderate winds from the west-north west and fueled a nice flight of 41 Cape May Warblers and good diversity of species. Strong winds from the northeast on 2 SEP turned out to be surprisingly productive. A nice flight of 25 Red-breasted Nuthatches, 22 Northern Waterthrushes, and 14 total species of warblers were counted. The next week was dominated by easterly winds, clouds, and eventually heavy rain on 6 SEP. Passerine movement was slow besides a Summer Tanager on 4 SEP. A front finally pushed out the dreary conditions, which set up a nice flight on 9 SEP with the season's only Golden-winged Warbler, 83 American Redstarts, and a total of 15 warbler species.

Mid-September brought some of the best warbler flights of the season with Cape May Warblers being particularly numerous. On 14 SEP 132 were counted and the season's high count of 201 was tallied on 16 SEP. A few hawks also began to move, with a handful of Sharp-shinned Hawks counted daily and good numbers of Broad-winged Hawks on days with northwest winds. The season's high of 110 Broad-winged Hawks was noted on 15 SEP, with good numbers holding to the end of the month, including 50 on 29 SEP. Other highlights include an adult Brown Booby that made an appearance on 15 SEP, as well as 2 Philadelphia Vireos. Light southwest winds on 19 SEP pushed up a Royal Tern and another Summer Tanager. A cold front on 20 SEP brought northwest winds and plenty of migrants, including the season's first Purple Finches. Strong winds from the southwest quickly took over for the next few days and affected the passerine flights. It did provide a good flight of Tree Swallows on 22 SEP with 1,028, the highest count for that species for the season.

The last week in September brought favorable winds from the west and north and produced some strong flights. The season's high count of 41 Tennessee

Warblers was tallied on 24 SEP, with numbers of later migrants such as Blackpoll Warblers, and Black-throated Green Warblers on the rise. Blackpolls peaked at 62 on 29 SEP, and Black-throated Greens peaked on 28 SEP with 26. This year's extraordinary irruption of Red-bellied Woodpeckers was first noticed in the last week of the month. Their numbers increased from 24 SEP through 27 SEP, but a west wind and cool temperatures brought an incredible 406 past the Point in a matter of hours on 28 SEP. This phenomenon continued into mid-October. Another hardwood species that showed tremendous numbers this year was White-breasted Nuthatches; 12 were counted on 29 SEP, but much higher numbers would arrive in October. Other species on the move were Northern "Yellow-shafted" Flickers, with 101 counted on 29 SEP, and Cedar Waxwings, with over 200 counted most days. The last few days of the month also brought good numbers of Blue Jays to the Point, with 1,100 counted on 30 SEP. Good numbers of Yellow-rumped "Myrtle" Warblers also began to arrive, with 117 counted on 30 SEP. Species diversity was also the highest in this last week, with many days tallying more than 60 species observed in active migration.

October

The first five days of October were cloudy, cool, and dominated by strong northeast winds from the remnants of Hurricane Ian pushing inland. A light drizzle persisted for several days and slowed most passerine migration, but strong north winds that occurred during this system kept a few species moving. A host of new species arrived on 3 OCT, and some significant numbers after a slow start to the month. Highlights included an adult Franklin's Gull moving south out of the Elk River, a Lincoln's Sparrow working along the cliff edge, and the season's first Cackling Goose. Warblers increased in numbers and diversity compared to the previous two days, probably related to a slight decrease in wind. The northeast winds increased to 25 mph (40 km/h) on 4 OCT with steady rain, and very few birds moved. The following day, the winds dropped to 10 mph (16 km/h) and the weather became misty, but conditions proved to be quite productive. A good flight of 67 Cape May Warblers and an incredible uptick of 722 American Goldfinches were noted. Typical daily goldfinch numbers had previously been at or below 30 per day. Goldfinches seemed to favor movement during moderate north winds and dreary weather, as similar numbers occurred several times later in the season with such conditions. The gray weather finally cleared on 6 OCT, and light northwest winds led to an excellent flight including 278 Red-bellied Woodpeckers, 160 Northern "Yellow-shafted" Flickers, 51 White-breasted Nuthatches, and a Royal Tern. The next few days stayed clear and provided favorable winds from the northwest. Another excellent flight of Red-bellied Woodpeckers occurred on 7 OCT with 452 counted, and the season's only Connecticut Warbler passed overhead on 8 OCT as noted by alternate counter Mikey Lutmerding. Large flocks of Blue Jays continued to circle the Point leading to daily counts in the thousands.

Dickcissels were also on the move on most clear mornings with north winds. Crisp weather with a stiff west wind arrived on 9 OCT and brought three new species for the season. Early in the day, 7 Gadwalls moved down the Bay and a Pine Siskin flew by high overhead in morning flight. The real highlight of the day came when an immature Northern Goshawk glided overhead to the awe of the counter and several lucky birders. Perfect conditions continued the following day and brought the season's amazing high count of 641 Red-bellied Woodpeckers as well as 81 White-breasted Nuthatches. The seasonal highs of 18 Yellow-bellied Sapsuckers, 14 Downy Woodpeckers, and 7 Hairy Woodpeckers, also were noted on the same day. It was a day for the record books as the Red-bellied Woodpecker count was a new all-time world high count!

The prevailing high pressure system eventually faded, leading to rain and 12 mph (19 km/h) south winds on 13 OCT. Although diversity slumped, a few late warblers powered through the wind and rain. A nice flight that morning included 44 Cape May Warblers, 24 Blackpoll Warblers, 27 Palm Warblers, and a stunning flight of 729 Yellow-rumped "Myrtle" Warblers. The most interesting observation of the day was that a majority of the Myrtles pushed straight south into the wind and, to the best of the counter's abilities, appeared to cross to the mainland without hesitation and never came back. This is fascinating because it illustrates that some warblers appear to be more comfortable crossing large bodies of water with a headwind as compared to winds at their back. Light winds from the northwest followed and brought a few more large flights of Red-bellied Woodpeckers, another strong flight of Yellow-rumped "Myrtle" Warblers with 1,100 on 15 OCT and another 398 on 17 OCT. Although there was no rain the previous day, gusty west winds kicked up on 18 OCT and brought the season's high counts of White-breasted Nuthatches (122) and Eastern Meadowlarks (18). The next day, the westerly winds drew more southerly and brought surprisingly good numbers for the day. Although the wind gusted over 20 mph (32 km/h), 601 Forster's Terns were tallied moving south down the Bay in loose flocks of 30–40. This strange southwesterly cold front also set up an excellent hawk flight with 98 Sharp-shinned Hawks, 13 Cooper's Hawks, and 11 American Kestrels. The winds continued from the southwest the next day, and very little was noted as this is not the preferred wind direction for nocturnal migration (Van Doren et al. 2016). However, the count's only Dunlin was observed moving south high overhead. Winds dropped to merely a breath on 21 OCT and came around from the north. An uptick in individuals was evident, with nearly double the previous day's count. Species of note included 5 Redheads, 3 Dickcissels, a Little Blue Heron, and the seasonal high of 25 Tufted Titmice in active morning flight. The following day was equally productive. Building daily counts of House Finches capped at 565, as well as the first good flight of American Robins with 535. American Goldfinches were also on the rise with 476. Aside from the spike early in the month, they slowly increased with

the passing days. Slightly more east in an otherwise north wind on 23 OCT produced the season's high of 322 Turkey Vultures and over 800 American Robins were noteworthy. The slightly easterly component of the wind roped in clouds and fog from the coast and set up an interesting morning on 24 OCT. At least 3,545 American Robins passed overhead, the high count for the season, and 2,026 Yellow-rumped "Myrtle" Warblers were counted working northwest around the Point, also that species' high count. Other species of note were 607 Tree Swallows and 707 Red-winged Blackbirds. Fog continued for the next two days. Interestingly, very few birds moved compared to 24 OCT. Wind was probably a factor as it was northerly at 12 mph (19 km/h) on 24 OCT but died down and switched to the east for the following two days.

The last few days of the month began with a strong cold front on 27 OCT that brought 153 Eastern Bluebirds, a late Red-eyed Vireo, and a nice hawk flight. The season's second Northern Goshawk, 54 Red-tailed Hawks, 23 Red-shouldered Hawks, and 20 Cooper's Hawks were tallied. Winds turned more northeast on 28 OCT and blew in a flock of 8 Brant, a late Philadelphia Vireo, and another solid Buteo flight. Northeasterly winds continued and provided the season's first Red-throated Loon on 29 OCT, an Evening Grosbeak and 2 Black Scoters on 30 OCT, and the season's high of 149 Purple Finches on 31 OCT.

November

The last month of this year's count began fairly slowly, with light south winds on the first day. A small cold front slipped in the following day, which brought a diverse flight on 2 NOV. The season's first Golden Eagle and a third Northern Goshawk drifted past the Point with a total of 71 species. The anticipated flocks of Common Grackles also arrived on 2 NOV with 36,200 estimated throughout the morning, most of them just before sunrise. The next four days consisted of mostly east winds, some fog, and eventually rain on 6 NOV. There were several fairly strong passerine and waterbird flights, turning up 3 Red-necked Grebes on 3 NOV, the only ones for the season. Other notables include the second Evening Grosbeak and 6 Red Crossbills on a foggy 4 NOV. Also noted that day was the season's high count of 37 Pine Siskins. Ducks of all types showed a sharp increase in November. Ring-necked Ducks had been on the increase since arriving on 28 OCT and reached their peak on 8 NOV with 153. All species of the diving duck genus *Aythya* showed good numbers throughout the month. Numbers of Cedar Waxwings peaked in November, A total of 1,284 on 7 NOV marked the season's high, but daily counts around 1,000 were tallied on and off throughout the month. Although rather scarce this far into the Chesapeake Bay, all three species of scoter were seen during the month. A powerful cold front on 8 NOV featuring 20 mph (32 km/h) winds straight out of the north brought the season's third Golden Eagle over the Point as well as the season's only Orange-crowned Warbler. Another Golden Eagle was counted on 9 NOV as well. The winds eventually came around from the east and brought seasonally warm

temperatures with morning lows in the 60s °F. Both passerine and waterfowl numbers were low in these several days; however, dreary conditions on 11 NOV brought the season's high for American Goldfinches (1,634). The following day was rather slow besides the first flock of Snow Geese moving south high overhead.

Mid-November showed a decrease in numbers and species and was dominated by crisp winds from the northwest. It did offer a few notable species, including an incredibly late Blue Grosbeak on 14 NOV, the season's fourth Northern Goshawk on 17 NOV, and 7 Red Crossbills on 18 NOV. A westerly gale on 17 NOV also brought an influx of Tundra Swans past the Point with 236. Several other massive flights of swans were tallied over the next five days, including the season high count of 524 on 19 NOV. Calm winds and very cold temperatures prevailed in the third week of the month. Ducks continued to arrive, with the first Red-breasted Mergansers of the season counted on 21 NOV, and the first White-winged Scoter on 23 NOV. Also of note on 23 NOV was a strong movement of 141 Canvasbacks powering south high over the Bay. This flight made up most of their numbers for the season, and only a handful were counted on the other days they were present. Evening Grosbeaks continued their southward irruption after the first was spotted on 30 OCT. One was counted on 23 NOV and 2 were seen on 27 NOV. A Red-throated Loon was noted on 23 NOV, as well as an influx of 64 Rusty Blackbirds. The last few days of the count were cold with gusty winds from the northwest. Passerine migration was nearly over, but species such as American Robin, Cedar Waxwing, and American Goldfinch showed consistent numbers up to the end of the count. Light westerly winds on 26 NOV brought the count's only Lapland Longspur, which vocalized as it flew south high overhead. The last day of MBP's Turkey Point Bird Count was 30 NOV. A steady rain began immediately after sunrise, and movement was very slow besides 2 Common Goldeneyes moving south, the only ones for the season.

All the data for this season are publicly available via Trektellen at the Maryland Biodiversity Project - Turkey Pt. morning flight page (Trektellen 2023f), and through eBird (2023b). Highlights and photos of the 2022 morning flight count can be found at the MBP's Turkey Point blog (Maryland Biodiversity Project 2022a).

Species Accounts – The Season's Notable Five

Red-bellied Woodpecker

The fall of 2022 was highlighted by the greatest flights of Red-bellied Woodpeckers ever documented on the East Coast. In addition to the incredible numbers at Turkey Point, the morning flight count in Cape May, New Jersey also recorded its highest count since recording their data in Trektellen in 2016 (Trektellen 2023c). Other observers recorded the New Jersey state high count at Delaware Avenue, another morning flight location in Cape May (eBird 2023d).

At Turkey Point, their irruption began as an unnoticeable trickle of a few individuals in August and most of September. They began to spike in the last week of the month with an uptick of 21 individuals counted on 21 SEP. For the next six days, they continued to increase with a count of 78 on the 27 SEP (Figure 1). During this fourth week in September, there was a stiff west or southwest wind at 15–20 mph (24–32 km/h), which likely kept most birds from moving. However, the wind calmed significantly and lost its southward component on 28 SEP, which opened the floodgates for them. During a span of four hours, 406 Red-bellied Woodpeckers were counted as they moved past the Point, a stunning number for this species. The next week was dominated by northeasterly winds, clouds, and intermittent precipitation. These conditions proved to be the least favorable, as some days no Red-bellied Woodpeckers were noted even while solid flights of passerines were underway. The weeklong stretch of dreary conditions finally broke on 6 OCT when 278 Red-bellied Woodpeckers were counted that day, compared to just one the previous day. What was the difference between the two days? Cloud cover. Dreary and cloudy conditions dominated on 5 OCT with a northwest wind; 6 OCT noted similar winds but was perfectly clear. Favorable conditions continued for the next few days and brought truly incredible numbers. Over 450 birds were tallied on 7 OCT, and 10 OCT brought the season's incredible high count of 641. After the record flight on 10 OCT, numbers quickly dropped, but migration continued through the end of the count, gradually declining as the season progressed. The 2021 season at Turkey Point netted a total of only 126 Red-bellied Woodpeckers (Trektellen 2023e), compared with 3,757 during the fall of 2022. Though generally considered non-migratory, small numbers of that species have been noted migrating past Cape Island, New Jersey (Sibley 1997). Their irruptive behavior could be related to the acorn crops of various oaks (*Quercus* spp.), a staple in the northern hardwoods during winter. (Acorn crops vary from year to year in a boom or bust cycle. If the bust years for most of the oak species fall in the same year, massive food shortages occur, leading to Red-bellied Woodpeckers, as well as Blue Jays and White-breasted Nuthatches pushing south [Dunn et al. 2022]). Those other species showcased large numbers during the fall of 2022 as well.

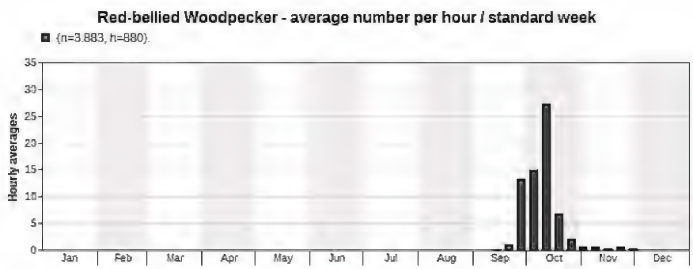

Figure 1. Red-bellied Woodpecker fall migration at Turkey Point, Cecil County, Maryland in 2022.

White-breasted Nuthatch

Although a fairly common, year-round species in Maryland and throughout much of the East Coast, White-breasted Nuthatches show noticeable irruptive behavior (Dunn et al. 2022). Like Red-bellied Woodpeckers, they rely on food provided by hardwood trees further north. eBird and Christmas Bird Count data show how numbers of White-breasted Nuthatches vary from year to year, usually alternating every year (Dunn et al. 2022). This is especially noticeable in the extreme coastal eastern United States and especially Delmarva, where few nest (Robbins and Blom 1996). Some winters they are almost impossible to find away from large stands of hardwoods and other years they are abundant across a variety of habitats; those in the large stands of deciduous forests are likely local, non-migratory breeders as that is their preferred habitat (Grubb and Pravosudov 2020). The first migrants were noted at Turkey Point on 3 AUG, with a total of six counted that month. September brought an increase to 36, with most seen in the last week of the month. October produced the peak of their southward irruption with a total of 1,038 counted. On 18 OCT, the highest daily count occurred with 122 individuals moving around the Point (Figure 2). Like most bird species migrating past Turkey Point, White-breasted Nuthatches preferred to move on days with clear and cool weather with west or northwest winds. Upon reaching the Point during the morning, they would typically circle back northwest into the wind. Numbers decreased significantly in November with only 42 counted. The last migrant was noted on 14 NOV.

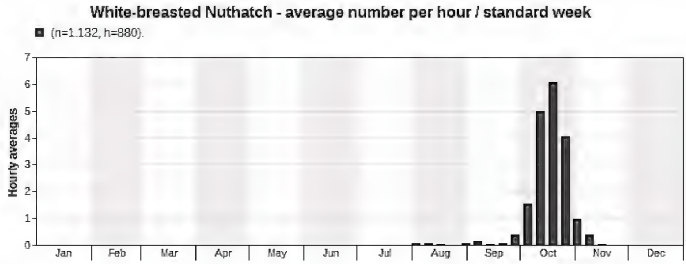

Figure 2. White-breasted Nuthatch fall migration at Turkey Point, Cecil County, Maryland in 2022.

American Goldfinch

Based on numbers at Turkey Point and other monitoring stations, the fall of 2022 was an irruption year for many species such as Purple Finch, Red-breasted Nuthatch, Pine Siskin, and Evening Grosbeak. One of the lesser-known members of this irruptive species list is the American Goldfinch. The first migrants were seen at Turkey Point on 3 AUG and steadily increased throughout the count period. A modest 113 were tallied in August, but the count jumped to 888 in September. October recorded 4,642 birds and double that number in November (9,374) (Figure 3). Goldfinches moved under just about every

weather condition and flew surprisingly well in rain and dreary conditions. They appeared to prefer cloudy and dreary weather; many of the top daily counts were noted in such conditions. The highest daily count occurred on 11 NOV with 1,634 and a total of 15,017 were counted during the fall. Most of the community attention in an irruption year goes to the rarer species like Evening Grosbeak, which can leave the more familiar species unnoticed. Morning flight counts are excellent for picking up on otherwise less detectable hills and valleys in species' migration numbers. This was only the second year of the Turkey Point morning flight count, but comparing it to 2021 provides a small but valuable window into the extent of the migration of American Goldfinches. During the fall of 2021, only 364 were counted in the entire season (Trektellen 2023d to be e), compared to 15,017 during the fall of 2022. Although this represents an incredible increase, it will take multiple years to detect trends.

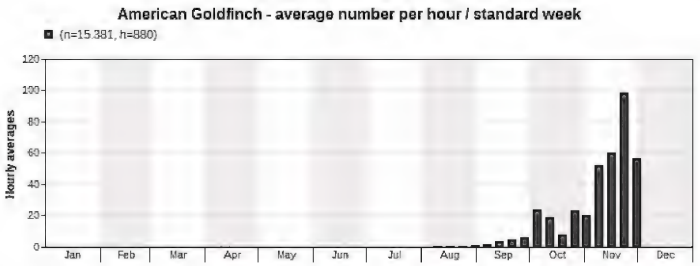

Figure 3. American Goldfinch fall migration at Turkey Point, Cecil County, Maryland in 2022.

Tundra Swan

Tundra Swan migration stood out as the most impressive among waterfowl species this season. They leave their high-Arctic breeding grounds and arrive in the Mid-Atlantic in early November, where their wintering range is surprisingly limited, most residing around the Chesapeake Bay and Pamlico Sound, North Carolina (Limpert et al. 2020). The species arrived on 7 NOV when a flock of 6 passed high overhead, with several other small flocks seen over the next ten days. Gusty west-northwest winds on 17 NOV brought large skeins totaling 236 streaming by the Point. Between 17 and 22 NOV, the majority of Tundra Swans for the season were counted with 524 on 19 NOV marking the high count. The height of their migration lasted less than a week with numbers trailing off after 22 NOV (Figure 4). This makes their migration one of the shortest of any species regularly seen at Turkey Point. The total for the season was 1,937 individuals while last year's count tallied just 23 (Trektellen 2023e). The fall 2021 count ended on 15 NOV, and if Tundra Swans moved on similar dates as in 2022, their peak movements may have been missed, which could explain the much lower number, but more years of data will provide a better understanding of the timing of their movements here.

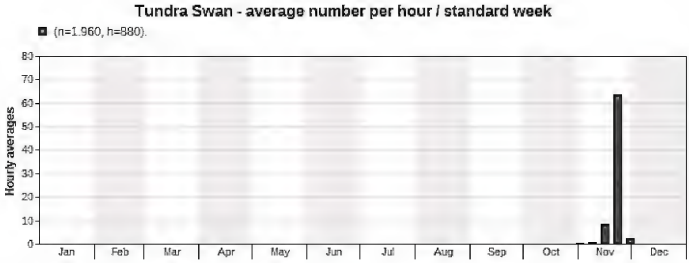

Figure 4. Tundra Swan fall migration at Turkey Point, Cecil County, Maryland in 2022.

Northern Goshawk

Northern Goshawks are one of the most sought-after raptors on the East Coast. These impressive hawks trickle south in small numbers from their high-elevation breeding grounds in the far north (Squires et al. 2020). Historically, Turkey Point was known as one of the best places in Maryland to spot this elusive *Accipiter*, but none had been reported here since 2016 (HawkCount 2023a). That all changed on a brisk 9 OCT, when one circled low over the Point to the amazement of the counter and several lucky birders. An additional 3 Northern Goshawks were spotted over the course of the season, one each on 27 OCT, 2 NOV, and 17 NOV (Figure 5). Surprisingly, last year's count did not document the species, which raises some questions about this season. An increase in goshawk numbers was also noticed at both the hawk watch and morning flight count in Cape May, New Jersey (Trektellen 2023d). The fall 2022 spike in goshawk numbers pales in comparison with numbers observed at locations across the northeast in the later 1990s and early 2000s (HawkCount 2023b) when several hundred were counted during each fall. It is likely a small influx of dispersing first-year birds riding strong cold fronts from the northwest, following a semi-productive breeding season somewhere in the north (Brinker, in litt., 22 January 2023) The weather conditions that provided the goshawks were nearly identical: cold, clear days with strong north or westerly winds after a powerful cold front. None were seen under any other weather condition during the 2022 count.

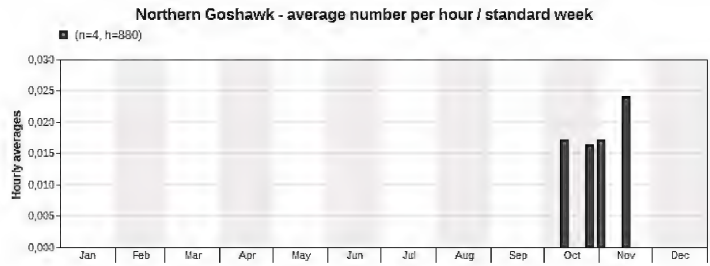

Figure 5. Northern Goshawk fall migration at Turkey Point, Cecil County, Maryland in 2022.

DISCUSSION

This section examines the variables that affect bird migration at Turkey Point and summarizes selected behaviors of different species noted during the season. Among these are weather patterns, flight directions of certain species and taxonomic families, and notes on methods of counting. Several unique trends documented during four months spent at Turkey Point are outlined as well.

Weather conditions and seasonal trends

Weather conditions have a major impact on day-to-day migration activity at Turkey Point, especially wind direction, cloud cover, and precipitation (Irons 2023). Even a seemingly insignificant change from cloudy to clear or a wind change from south to north will drastically affect the totals and species diversity from one day to the next. This inconsistent weather cycle of clear and cool to cloudy and eventually rain also makes tracking arrival and departure dates difficult and variable. Many species first arrive with a cold front, so a prolonged stretch of southerly winds or a period of clouds and rain might drastically delay the arrival of a species. For a species with a short migration window such as Tundra Swan, a prolonged stretch of unfavorable conditions (e.g., fog and south wind) might change its entire migration window for the year. Documenting this range of dates and correlation with weather variables will require multiple years of monitoring.

One of the most notable and unusual weather patterns observed throughout the season was the wind associated with strong fronts from the west. Although every season in this area features cold fronts with north and northwest winds, the fall of 2022 was unique and possibly affected totals and diversity. This abnormality was the wind direction during, and especially a few days after, a strong cold front. In recent years, winds after a fall rain event and cold front start somewhere between due north and west-northwest. By the second or third day afterward, the winds often drift more north and east (pers. obs.) before coming around to the south before the next rain storm. During the fall of 2022, winds started out more westerly and often turned in a southwest direction instead of more north or east in the few days after a front. These were not warm fronts pushing up, as the mornings with this strange southwest or west-southwest wind were cold and blustery. This pattern of more southwesterly winds after a cold front seemed to be caused by two things, the route of low pressure systems and the location of where high pressure holds following a storm and cold front, mostly the latter. Wind stream maps were analyzed throughout the fall provided by the smartphone and internet application, Windy (Windy 2023), and it appeared that these high pressure systems, indicated by isobars, held over the interior Southeast, instead of further north. Winds move clockwise around areas of high pressure (UCAR 2023), and if the systems are to our south, the rotating winds will hit Maryland from a southwesterly direction following a front. Of course, this was not the case with every front, but this pattern seemed to occur in

a higher percentage than in the last few years based on personal observations of weather systems during fall in eastern Maryland. The main effect this trend had on numbers at Turkey Point was that although birds moved during and after these fronts, they were blown to the coastline, likely skipping over Turkey Point. Many of the largest recorded warbler flights at coastal sites like Cape May, New Jersey, occurred during the fall of 2022 (Trektellen 2023b). With fewer days of northeast winds, passerines continued south closer to the coast and were never blown back inland. Although there were notable warbler flights at Turkey Point this year, overall numbers for the season were perhaps lower compared with 2021 Turkey Point numbers, and relative to the record flights at coastal monitoring locations.

One species that was observed almost entirely during northeast winds during the fall of 2022 and 2021 (Trektellen 2023e) were Double-crested Cormorants and the highest counts for them occur on such winds. Avalon Seawatch in Avalon, New Jersey also noted the highest numbers on northeast winds (Trektellen 2023a) and it is possible that these onshore winds push large flocks inland, where they then pass by Turkey Point. Although there were a few moderate flights of around 500 individuals, there were none to the extent of last year, where the top daily count totaled over 2,000 (Trektellen 2023e).

Behaviors of different species in morning flight

A common misconception is that passerines in morning flight reaching a peninsula surrounded by water, will simply cross directly to the mainland. This is not the case at Turkey Point or similar Mid-Atlantic locations (Van Doren et al. 2016). Out of the thousands of passerines counted in morning flight, incredibly few were observed crossing the Elk River to the mainland. Oddly, the few that did so were flying into a stiff headwind and often rain. One of the few species that were observed crossing was the Yellow-rumped "Myrtle" Warbler. A prime example was 13 OCT, when 729 were counted streaming south across the Elk River into a 12-mph (19-km/h) headwind and steady rain. Several other days with similar conditions provided the same results. Practically no warblers in morning flight were observed crossing on a north or west wind or during clear conditions. Woodpeckers often tried to cross, and although some made it far out over the river, all eventually returned, several getting picked off by hungry falcons that regularly patrolled the waters off the Point. Blue Jays also made serious attempts at crossing, but few flocks ever succeeded. Most circled high above the Point before giving up and either looping back north or dropping down into the trees around the Point.

A few species had no problem making the jump. Interestingly, Ruby-throated Hummingbirds seemed eager to cross, preferring a moderate headwind, but some crossed in other conditions as well. All expected species of swallow crossed both the Chesapeake Bay and Elk River without hesitation. Most swallow numbers early in the season appeared to be coming from a nearby roost.

They would cut across the Point heading east, most often from the vicinity of Aberdeen Proving Grounds, although small flights came from almost every direction depending on the day. Either way, swallows migrating or coming from roosts were not fazed by water.

Generally, in a morning flight scenario similar to Turkey Point, birds move around the tip of a peninsula into the wind (Van Doren et al. 2016). As expected, this is the case at Turkey Point as well, with most small passerines following that pattern. During winds with any westerly component, a significant majority of passerines in morning flight favored moving around the point into the wind in a northwest direction. Interestingly, during any easterly wind, passerines still favored moving northwest. While not the overwhelming majority that move northwest in a westerly wind, far more birds moved westward on easterly winds than the number that looped eastward on a westerly wind. This observation aligns with the wind drift hypothesis outlined in Van Doren et al. (2016), suggesting that wind direction is not the sole factor in determining flight direction. The wind drift hypothesis states that passerines engage in morning flight to reorient inland (west), and avoid the danger of being blown over the ocean by a strong cold front and westerly winds while migrating nocturnally. This hypothesis could explain the general preference among passerines to move west regardless of wind. Winds from the south or southeast caused irregular movements among small passerines with individuals going all different directions, but with a slight preference of heading into the wind and looping around the Point counter-clockwise. Exceptionally light winds from directions besides north and west amplified this confusion, and on such mornings, birds were observed moving in every direction with little preference.

All raptors shared similar flight patterns but were more simplified and direct compared to passerines. Most hawks moved with winds of northerly or westerly components. With these favorable conditions, many cross the Elk River without hesitation, whether right off the end of the Point, or off the southeast corner. However, sometimes both small and large hawks would loop around the Point and head back north, similar to the movements of small passerines. On days with south or east winds, hawk movements declined significantly. However, cloudy days with winds from the northeast brought the highest numbers of Turkey Vultures. Even with the preferred northwest winds for most other hawks, Turkey Vulture numbers were much lower as compared to days with winds with an easterly component.

Waterfowl of many species were very prominent at Turkey Point, especially later in the season. Dabblers, divers, geese, and swans used very simple flight paths when moving past Turkey Point and were rarely fazed by land or water. Most puddle ducks like American Wigeons, Northern Pintails, Blue-winged and Green Winged Teal, Mallards, and American Black Ducks were seen fairly high above the Point or high over the Bay. Few moved low along the water (although

a higher number were observed doing so in inclement weather). The vast majority of puddle ducks moved south, often in flocks of a dozen or so, with a few stragglers moving other directions and not actively migrating. Diving ducks like scaup, Canvasbacks, scoters, and mergansers followed a similar southward pattern but moved lower over the Bay, often right over the water. Very few moved over land like puddle ducks. Geese and Tundra Swans again followed similar flight lines as other waterfowl but would be much higher, especially on days with strong north or west winds, and were not fazed by land or water. Most of the waterfowl seen at Turkey Point seemed to be coming from the Susquehanna Flats, a staging and feeding area north of the Point at the very top of the Chesapeake Bay. Thousands of waterfowl of all species can be seen there in late fall feeding on submerged and floating aquatic vegetation. (eBird 2023c) On days with north winds, rafts of this vegetation drift south where it is in view from the Point. On such days, sizable flocks of ducks would be seen feeding around these floating mats early in the morning before taking off and moving south down the Bay. The large concentration of this food source may draw ducks moving south nocturnally or during the day and hold them for a few days before they pick up and continue south past Turkey Point.

What passerines at Turkey Point and any other location do once circling the Point is a great unknown. One certainty is that they end up further north on the peninsula, as noted in last season's report (Irons 2023), the Point is very quiet later in the day, and areas around the parking lot (1-mi [1.6-km] north) are much more active than the Point. How far north passerines make it before landing is also unknown as well as if they continue bush-hopping after their initial flight in the morning. Most probably work north a few miles up the edge of the peninsula and disperse into the vast areas of Elk Neck State Park and State Forest. How far north these passerines continue after passing over the Point is only a guess and all speculation is based solely on personal birding observations in the areas north of the Point later in the day after the count ended.

Standardizing Counting Techniques

A pressing question for a morning flight count is how to standardize the differences in counting styles from counter to counter each season. Choosing which species to count, estimating large flocks, and counting birds circling the Point more than once are worth discussing. Deciding which species and individuals to count on a given day is subjective, and counters may have different abilities and preferences. This is especially true with species that hang around the Point and are not actively migrating and for species that are residents but migrants also move through. The migratory status of gulls, woodpeckers, some hawks, swallows, and any other local species can be uncertain.

On some days with high numbers of total individuals moving over the Point, estimation is required, especially for exceptionally large flocks. Blue Jays and Common Grackles are the most frequent species to be estimated. In early

November, incredible waves of Common Grackles streamed by the Point at dawn, and for a week or so, over 10,000 were estimated most mornings. The question is how accurate are these estimations? These massive flocks move through in sometimes less than 15 minutes and it is not only impossible to count them but there is no way of knowing how accurate the estimations are. Some days, I contemplated whether there were 10,000, 50,000, or maybe even 100,000. Methods for estimating and results vary greatly between each counter which makes it difficult to pin down actual population trends for species like Common Grackle and Blue Jay, when the majority of their numbers are estimated. Hopefully, years of continuous monitoring will help.

Another area where numbers could vary between counters is how potential repeats are treated. Every day there are a few individuals and flocks that are suspected to be repeats and may or may not be counted again depending on the counter and circumstance. How to deal with repeats is another issue in itself as there were many instances where an individual bird with unique characteristics is seen more than once in a day or multiple times over several days. This season, several Blue Jays with leucism were seen with the massive flocks that circled the Point making them perfect subjects for which to keep an eye out. Sure enough, all of the Blue Jays with distinct plumage characteristics were seen several times every day, and for up to a week before moving on. A Blue-gray Gnatcatcher with a missing tail was also noted moving around the Point twice in a morning. These observations raise questions as to how many birds move around the Point more than once. If a high percentage of the unique individuals were seen again, repeats may be occurring on a more regular basis than previously thought. Accidentally counting a few repeats should not affect the overall totals for many species but large flocks could cause a significant difference. For example, if a few of the most prominent Blue Jay flocks for a given day head north after making a pass, then return, totals could be swayed significantly. To ensure consistency over many years, it is probably ideal to count everything besides the few individuals or flocks that are either seen doubling back or are positively repeats based on unique plumage or other factors.

The second season of MBP's Turkey Point morning flight count expanded our previous understanding of morning flight on Maryland's inland coastal plain transition zone. With the establishment of a morning flight count at Dans Rock in western Maryland in fall 2022 and with continued effort in Cape May, New Jersey, even more comparisons can be made, not only in numbers of birds seen, but also migration routes and preferences of different species between three sites. Each location offers a unique perspective on morning flight and over the next several years, more counts will hopefully pop up, filling in the puzzle of East Coast morning flight.

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Dans Rock Fall Migration Count: 2022 Season Report

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Abstract: In the fall of 2022, the Maryland Biodiversity Project started the Dans Rock Fall Migration Count as a novel method to document southbound avian migration along the Allegheny Front in Maryland. Dans Rock Overlook is the highest point on Dans Mountain along the Allegheny Front in Allegany County, Maryland. The count was held from 1 August to 30 November 2022 using the same protocols as the Turkey Point Fall Migration Count and Cape May Bird Observatory morning flight count. The Dans Rock count was the first non-coastal morning flight count for the Mid-Atlantic and the first morning flight count for the Appalachian Mountains. It provided important quantitative insights into regional bird populations and the nature of their migrations (e.g., relative abundance, timing, weather impacts). The value is compounded when compared to the results of the Cape May Bird Observatory and Turkey Point counts. During the 2022 season, the Dans Rock count documented 52,746 individuals of 103 species in southbound migration. The count worked to document the abundance, diversity, and migratory behavior of southbound migrants at an inland site along the Allegheny Front. While the count's primary focus was the morning flight of land birds past Dans Rock, efforts were made to count all species, including migratory insects, moving down the ridge.

The annual migrations of birds are one of the most noticeable spectacles in the natural world. Each fall, millions of birds migrate south across the continent from their breeding grounds at northern latitudes to reach their wintering grounds. Despite its somewhat predictable schedule, accessibility, and annual cycle, there is still much to learn about migration. Morning flight is a novel approach that can further our understanding of bird migration. Most small passerine species migrate at night, and thus do not provide the same visual spectacle as diurnal migrants, such as raptors. However, it is possible to get a glimpse into this phenomenon by positioning observers in geographic areas conducive for concentrating migrants (e.g., the tip of a peninsula, on a ridgetop) near sunrise. As day breaks, birds that have been migrating at night begin searching for a suitable place to land and forage for the day. This opportunity to identify low-flying passerine migrants led to the advent of morning flight counts.

Over the years, Dans Rock has gained a reputation as a good hawk-watching location and one of the best places to see Golden Eagle in Maryland (eBird

2022). No formal count has been held at Dans Rock, but observers have visited this location on days with favorable conditions for raptor migration for many years. Formal hawk watches in Allegany County have been conducted at both Cumberland Gap and Town Hill Overlook, but neither of these locations has ever been monitored for morning flight. This count was the first non-coastal morning flight count in the Mid-Atlantic and the first morning flight count in the Appalachians. The goal for establishing this count was to collect a standardized data set that would further our understanding of the dynamics of bird migration in the Appalachians. Additionally, concurrent morning flight counts at similar latitudes at Cape May, New Jersey and Turkey Point, Maryland allow for an interesting comparison of migration across the three locations.

METHODS

Dans Rock sits atop Dans Mountain which comprises part of the Allegheny Front in Allegany County, Maryland (Figure 1). The Allegheny Front serves as the divide between the Ridge and Valley region to the east, and the higher elevation Allegheny Plateau to the west. This ridgeline is well known for its use by raptors during migration, and this count examined whether passerine migrants follow this corridor as well. This section of ridgeline is nearly entirely forested with a few small fields, clearings for houses, and cell towers. Dans Rock Overlook sits at the highest point of the ridge and has two observation platforms atop a rocky outcropping that protrudes above canopy level. The Potomac River flows 3 mi (5 km) to the east of the overlook and forms a sizable valley, which Dans Rock overlooks.

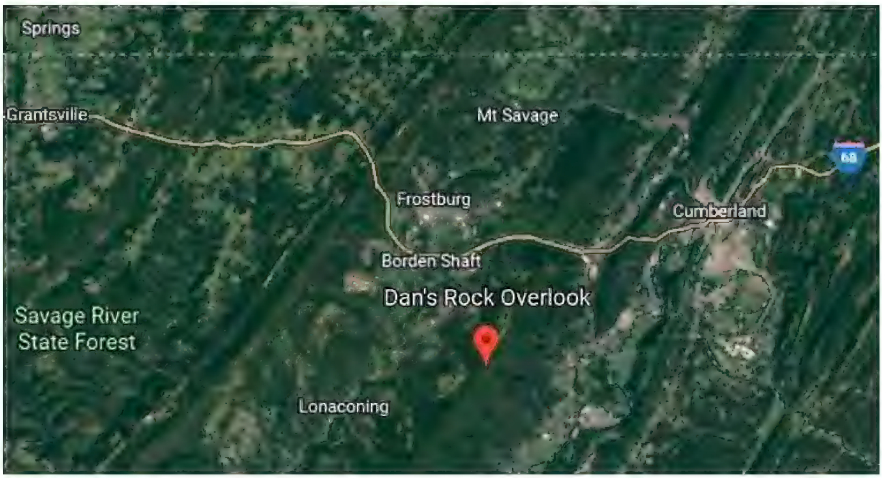

Figure 1. Dans Rock Overlook. Located in western Maryland between Cumberland and Frostburg, the count site is located on the Allegheny Front, which provides a panoramic view for morning flight observation (Google Earth 2022).

The count was conducted daily from one of the two metal observation platforms that sit roughly 18 m (59 ft) apart at the top of Dans Rock Overlook. The counter selected which platform to stand on based on where the majority of that morning's flight was taking place. The southern platform provided a better vantage looking down into the Potomac River valley to the east of the ridge as well as back to the southwest through the powerline cut that ran from the parking area for the overlook. The northern platform provided a better vantage out to the northwest and was primarily used when a good raptor flight was underway. The count ran from 1 August through 30 November 2022. Each morning the count began 15 minutes before sunrise and ran for a minimum of three hours after sunrise. On days with strong migratory movement, the count was extended past the three-hour mark until migration activity ceased. The count was ended early or suspended on days with continuous heavy rain that prevented flights. Migration data were collected and entered in the field using the Dutch software Trektellen (2022a), allowing the live stream of sightings to Maryland Biodiversity Project's (MBP) count page and to the Trektellen website. Flight direction and time were recorded with each entry into the database. Daily reports were also filed with Cornell University's eBird application (eBird 2022). The count was conducted by experienced alternate counters on the mornings when the lead counter had days off. All alternate counters had many years of birding experience and were either trained by the lead counter or already had experience supporting morning flight counts.

RESULTS

During the 2022 season, the count documented 52,746 individuals of 103 species in active migration (Table 1). Nine other taxonomic levels (e.g., "warbler sp.") were also tracked for a total of 2,366 individuals. The count was conducted on 121 of the 122 days during the count period for a total of 387 observation hours. The total number of individuals and overall species diversity varied by month, ranging from a high of 26,655 individuals in November to a low in August with 4,498 individuals. September had the highest diversity with 76 species and November had the lowest count with 44 species. All numbers in this report derive from totals of all identified species regardless of flight direction.

Table. 1 2022 Dans Rock Fall Migration Count Results.

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Canada Goose	0	7	16	0	23	10 (17 Oct)	15 Sep	17 Oct
Tundra Swan	0	0	0	5	5	5 (16 Nov)	16 Nov	16 Nov
duck sp.	0	0	7	0	7	7 (28 Oct)	28 Oct	28 Oct
Rock Pigeon	6	0	42	6	54	37 (16 Oct)	3 Aug	8 Nov
Mourning Dove	29	3	5	3	40	6 (7 Aug)	1 Aug	3 Nov
Yellow-billed Cuckoo	0	1	0	0	1	1 (24 Sep)	24 Sep	24 Sep
Common Nighthawk	0	1	0	0	1	1 (10 Sep)	10 Sep	10 Sep

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Chimney Swift	657	413	11	0	1,081	149 (20 Aug)	1 Aug	7 Oct
Ruby-throated Hummingbird	136	89	0	0	225	18 (15 Sep)	1 Aug	26 Sep
Killdeer	1	1	1	14	17	8 (8 Nov)	7 Aug	8 Nov
Upland Sandpiper	1	0	0	0	1	1 (1 Aug)	1 Aug	1 Aug
Ring-billed Gull	0	0	0	1	1	1 (8 Nov)	8 Nov	8 Nov
Double-crested Cormorant	0	1	22	0	23	19 (25 Oct)	16 Sep	25 Oct
Great Blue Heron	0	1	1	1	3	1 (15 Sep)	15 Sep	3 Nov
Black Vulture	0	0	0	4	4	4 (22 Nov)	22 Nov	22 Nov
Turkey Vulture	0	1	80	19	100	21 (24 Oct)	23 Sep	16 Nov
Osprey	0	6	0	0	6	1 (15 Sep)	15 Sep	29 Sep
Golden Eagle	0	0	0	12	12	3 (16 Nov)	3 Nov	28 Nov
Northern Harrier	0	3	1	2	6	2 (1 Nov)	15 Sep	1 Nov
Sharp-shinned Hawk	1	29	60	8	98	16 (16 Oct)	26 Aug	24 Nov
Cooper's Hawk	1	11	9	7	28	4 (27 Oct)	9 Aug	18 Nov
Bald Eagle	1	32	3	5	41	10 (27 Sep)	21 Aug	28 Nov
Red-shouldered Hawk	0	2	0	1	3	1 (14 Sep)	14 Sep	19 Nov
Broad-winged Hawk	1	474	1	0	476	169 (20 Sep)	8 Aug	16 Oct
Red-tailed Hawk	0	8	8	24	40	8 (7 Nov)	15 Sep	28 Nov
Rough-legged Hawk	0	0	0	1	1	1 (5 Nov)	5 Nov	5 Nov
Red-headed Woodpecker	0	4	0	0	4	2 (27 Sep)	6 Sep	27 Sep
Red-bellied Woodpecker	0	11	30	0	41	7 (3 Oct)	21 Sep	24 Oct
Yellow-bellied Sapsucker	0	2	2	0	4	1 (18 Sep)	18 Sep	21 Oct
Downy Woodpecker	0	0	9	0	9	3 (28 Oct)	6 Oct	28 Oct
Hairy Woodpecker	0	0	4	1	5	2 (25 Oct)	13 Oct	8 Nov
Northern Flicker (Yellow-Shafted)	0	8	3	0	11	2 (21 Sep)	21 Sep	13 Oct
American Kestrel	1	5	6	0	12	3 (18 Oct)	24 Aug	27 Oct
Merlin	0	1	3	1	5	1 (15 Sep)	15 Sep	1 Nov
Peregrine Falcon	0	2	1	0	3	1 (24 Sep)	24 Sep	19 Oct
Eastern Wood-Pewee	13	20	0	0	33	5 (26 Aug)	2 Aug	21 Sep
Traill's Flycatcher	1	0	0	0	1	1 (20 Aug)	20 Aug	20 Aug
Empidonax sp.	1	1	0	0	2	1 (3 Aug)	3 Aug	20 Sep
Eastern Phoebe	1	1	6	0	8	2 (7 Oct)	8 Aug	24 Oct
Blue-headed Vireo	0	1	8	0	9	3 (25 Oct)	22 Sep	25 Oct
Philadelphia Vireo	0	5	0	0	5	1 (17 Sep)	17 Sep	29 Sep
Red-eyed Vireo	9	12	1	0	22	6 (9 Sep)	2 Aug	5 Oct
Blue Jay	0	992	358	0	1,350	216 (29 Sep)	21 Sep	27 Oct
American Crow	0	0	16	15	31	11 (30 Oct)	28 Oct	18 Nov
Black-capped Chickadee	0	0	22	15	37	10 (3 Nov)	24 Oct	7 Nov
Horned Lark	1	0	0	3	4	1 (9 Aug)	9 Aug	23 Nov
Tree Swallow	0	1	2	0	3	2 (3 Oct)	17 Sep	3 Oct
Barn Swallow	272	4	0	0	276	32 (17 Aug)	1 Aug	15 Sep
Cliff Swallow	14	23	0	0	37	15 (1 Sep)	1 Aug	17 Sep
swallow sp.	0	6	0	0	6	3 (15 Sep)	15 Sep	29 Sep
Ruby-crowned Kinglet	0	19	50	1	70	14 (21 Oct)	14 Sep	6 Nov
Golden-crowned Kinglet	0	0	42	3	45	12 (29 Oct)	10 Oct	8 Nov
Cedar Waxwing	1,993	1,280	3,163	6,205	12,641	1,415 (3 Nov)	1 Aug	28 Nov
Red-breasted Nuthatch	22	93	51	3	169	19 (20 Sep)	10 Aug	7 Nov
White-breasted Nuthatch	0	4	116	6	126	16 (22 Oct)	24 Sep	9 Nov
Brown Creeper	0	1	2	0	3	1 (7 Sep)	7 Sep	21 Oct
Blue-gray Gnatcatcher	18	14	0	0	32	3 (17 Aug)	3 Aug	21 Sep
Winter Wren	0	0	0	1	1	1 (6 Nov)	6 Nov	6 Nov
European Starling	2	10	110	4,268	4,390	1,659 (18 Nov)	2 Aug	30 Nov
Eastern Bluebird	0	2	30	104	136	42 (3 Nov)	26 Sep	28 Nov
Swainson's Thrush	0	0	1	0	1	1 (7 Oct)	7 Oct	7 Oct
American Robin	39	48	5,825	11,158	17,070	3,652 (1 Nov)	2 Aug	29 Nov
American Pipit	0	1	25	8	34	15 (30 Oct)	24 Sep	8 Nov
Evening Grosbeak	0	0	0	8	8	4 (12 Nov)	2 Nov	12 Nov
House Finch	23	4	42	31	100	13 (24 Oct)	2 Aug	23 Nov
Purple Finch	1	14	219	113	347	96 (24 Oct)	11 Aug	26 Nov
Red Crossbill	0	0	5	1	6	5 (19 Oct)	19 Oct	8 Nov

Species	AUG	SEP	OCT	NOV	Total	Max. Count (Date)	First Observed	Last Observed
Pine Siskin	0	2	17	16	35	8 (30 Oct)	16 Sep	21 Nov
American Goldfinch	153	928	209	318	1,608	282 (16 Sep)	6 Aug	29 Nov
finch sp.	0	0	0	21	21	11 (3 Nov)	3 Nov	9 Nov
Chipping Sparrow	5	3	8	1	17	5 (25 Oct)	2 Aug	3 Nov
Field Sparrow	1	0	0	0	1	1 (2 Aug)	2 Aug	2 Aug
Fox Sparrow (Red)	0	0	2	1	3	1 (29 Oct)	29 Oct	6 Nov
Dark-eyed Junco (Slate-colored)	0	0	33	60	93	14 (30 Oct)	8 Oct	27 Nov
Bobolink	41	2	0	0	43	19 (22 Aug)	12 Aug	20 Sep
Baltimore Oriole	10	1	0	0	11	5 (17 Aug)	3 Aug	2 Sep
Red-winged Blackbird	92	1	4,306	3,329	7,728	2,548 (2 Nov)	3 Aug	28 Nov
Brown-headed Cowbird	1	0	0	0	1	1 (2 Aug)	2 Aug	2 Aug
Rusty Blackbird	0	0	1	2	3	2 (16 Nov)	25 Oct	16 Nov
Common Grackle	2	3	271	820	1,096	778 (2 Nov)	2 Aug	28 Nov
Ovenbird	20	2	0	0	22	2 (6 Aug)	2 Aug	2 Sep
Worm-eating Warbler	3	0	0	0	3	2 (3 Aug)	3 Aug	8 Aug
Northern Waterthrush	3	0	0	0	3	1 (20 Aug)	20 Aug	24 Aug
Louisiana/Northern Waterthrush	2	0	0	0	2	2 (10 Aug)	10 Aug	10 Aug
Black-and-white Warbler	20	5	1	0	26	3 (21 Aug)	2 Aug	3 Oct
Tennessee Warbler	11	110	9	0	130	15 (1 Sep)	1 Aug	8 Oct
Nashville Warbler	0	4	1	0	5	2 (21 Sep)	19 Sep	15 Oct
Connecticut Warbler	0	1	0	0	1	1 (11 Sep)	11 Sep	11 Sep
Hooded Warbler	2	0	0	0	2	1 (19 Aug)	19 Aug	30 Aug
American Redstart	29	42	0	0	71	6 (11 Aug)	2 Aug	22 Sep
Cape May Warbler	229	891	18	0	1,138	276 (1 Sep)	12 Aug	12 Oct
Cerulean Warbler	2	0	0	0	2	1 (3 Aug)	3 Aug	6 Aug
Northern Parula	0	5	0	0	5	3 (17 Sep)	17 Sep	24 Sep
Magnolia Warbler	0	62	2	0	64	10 (11 Sep)	2 Sep	4 Oct
Bay-breasted Warbler	0	56	2	0	58	7 (20 Sep)	1 Sep	3 Oct
Bay-breasted/Blackpoll Warbler	0	13	0	0	13	6 (10 Sep)	10 Sep	23 Sep
Blackburnian Warbler	100	63	1	0	164	19 (11 Aug)	8 Aug	3 Oct
Yellow Warbler	3	1	0	0	4	1 (1 Aug)	1 Aug	9 Sep
Chestnut-sided Warbler	11	11	0	0	22	4 (20 Aug)	3 Aug	24 Sep
Blackpoll Warbler	0	91	86	0	177	17 (3 Oct)	7 Sep	23 Oct
Black-throated Blue Warbler	14	69	4	0	87	8 (11 Sep)	10 Aug	17 Oct
Palm Warbler	0	2	1	0	3	1 (21 Sep)	21 Sep	25 Oct
Yellow-rumped Warbler (Myrtle)	1	4	370	29	404	84 (24 Oct)	29 Aug	12 Nov
Prairie Warbler	0	1	0	0	1	1 (27 Sep)	27 Sep	27 Sep
Black-throated Green Warbler	79	192	10	0	281	20 (20 Sep)	2 Aug	14 Oct
Canada Warbler	1	0	0	0	1	1 (7 Aug)	7 Aug	7 Aug
Wilson's Warbler	0	1	0	0	1	1 (9 Sep)	9 Sep	9 Sep
warbler sp.	371	1,793	100	0	2,264	548 (15 Sep)	1 Aug	17 Oct
Scarlet Tanager	18	18	0	0	36	3 (3 Aug)	1 Aug	27 Sep
Rose-breasted Grosbeak	4	3	0	0	7	2 (18 Sep)	3 Aug	18 Sep
Indigo Bunting	9	2	0	0	11	2 (17 Aug)	1 Aug	20 Sep
passerine sp.	15	26	9	0	50	7 (3 Sep)	11 Aug	14 Oct

MONTHLY SUMMARIES

August

The count tallied 4,497 individuals of 56 species during August. The count kicked off on 1 AUG with moderate west winds and foggy conditions. Arguably the rarest bird of the entire season was detected on the first day of the count when an Upland Sandpiper was heard calling in the fog. An early Tennessee Warbler on 1 AUG was also notable. Northwest winds and no fog the next morning made for a diverse flight with 22 species detected, including 3 more

Tennessee Warblers. Similar conditions on 3 AUG produced low numbers but good species diversity, with the clear highlight being a Cerulean Warbler. Unfavorable winds on the next four days really slowed migration down at the count site; Chimney Swifts, Cedar Waxwings, and a small number of warblers were the primary migrants on these mornings. West winds on 8 AUG brought the first substantial flight, when a Worm-eating Warbler was a highlight on a flight dominated by swifts and waxwings. A Horned Lark on 9 AUG was notable as being early and a scarce migrant in this region of Maryland (pers. obs.).

Migration started to develop a different feel around 10 AUG when some migrants typically found later in the fall began to appear. This included the season's first Red-breasted Nuthatch, a sign of things to come for numerous irruptive species here this fall. Northwest winds the next day provided a very early Purple Finch and the 19 Blackburnian Warblers, which ended up being the season's high count. The same was true of a flight of 6 American Redstarts. Light northwest winds on 12 AUG and 13 AUG did not generate much movement, but a highlight was the season's first Cape May Warbler and Bobolink. The winds switching to the south the next three days did not aid in moving birds. The winds finally shifted to the north on 17 AUG and brought with them some welcomed diversity to the count with 160 individuals of 17 species recorded. The counts of 32 Barn Swallows, 3 Blue-gray Gnatcatchers, 5 Baltimore Orioles, and 2 Indigo Buntings all ended up being those species' highest counts for the season. Northwest winds on 18 AUG produced 3 more Red-breasted Nuthatches and west winds on 19 AUG delivered the first Hooded Warbler of the season. Southwest winds on 20 AUG unexpectedly provided a solid flight of 376 individuals of 24 species. Highlights from this diverse flight included the season's first Northern Waterthrush, and the 149 Chimney Swifts and the 4 Chestnut-sided Warblers were both the highest counts for the season.

Fortunately, winds were out of the north for the next week, which provided a couple of decent days of activity. This early in the season individual numbers of birds were not very high, but the good days were defined by species diversity. Cedar Waxwings continued to be the primary migrant during this week, but Cape May Warblers became a banner species with some impressive counts. Highlights from this period of northerly winds included 19 Bobolinks on 22 AUG, an American Kestrel on 24 AUG (first raptor for the season), and 53 Cape May Warblers on 26 AUG. The winds swung around to the south-southwest on 29 AUG, but an early Yellow-rumped "Myrtle" Warbler was the first of many for the season. The southerly winds continued on 30 AUG which made for a very slow day. The final day of the month had west winds, and counts of 16 Ruby-throated Hummingbirds and 42 American Goldfinches were notable.

September

The count tallied 8,080 individuals of 81 species during September. Northwest winds on 1 SEP generated what was probably the best flight of the season. Nearly 500 warblers were counted with an astonishing 276 Cape May Warblers leading the way. Counts of 15 Tennessee Warblers and 15 Cliff Swallows were both season highs. The season's first Bay-breasted Warbler was also recorded. North winds continued on the next day and produced another early Purple Finch, the first Magnolia Warbler for the season, and an additional 88 Cape May Warblers. Interestingly, more north winds on 3 SEP failed to produce much of a flight. A combination of south winds or rainy conditions the next five days failed to produce any quality flights and rained out the majority of the count on a couple of occasions. A Red-headed Woodpecker on 6 SEP and a Brown Creeper on 7 SEP were both firsts for the count.

North winds and clear skies had birds moving again on 9 SEP with 444 individuals of 27 species recorded. Highlights were another Red-headed Woodpecker, another good showing of 82 Cape May Warblers, the season's first migrating Red-eyed Vireo, and what would be the only Wilson's Warbler for the count. The winds held for 10 SEP which delivered 21 species, including the season's only Common Nighthawk. The winds shifted to the southeast for 11 SEP, but still produced some notable counts. Magnolia Warblers had a season high of 10, the 8 Black-throated Blue Warblers were also a season best, and the Connecticut Warbler was one of the best sightings of the season.

The next five days would all have a northwest wind component, but with varying flight quality. Rainy conditions on 12 SEP made for a slow flight. A big flight of 33 Cape May Warblers were tallied on 13 SEP. Red-shouldered Hawk and Ruby-crowned Kinglet were both new for the season among the 21 species recorded on 14 SEP. Despite similar conditions to the previous days, the flight on 15 SEP was excellent and the 37 species was the most diverse flight of the season. It was the best warbler day of the season with nearly 700 total individuals. Cape May Warblers led the way with 115. Ruby-throated Hummingbirds had their best day with 18 and American Goldfinches had a great day with 230 counted. Canada Goose, Great Blue Heron, Osprey, Northern Harrier, Red-tailed Hawk, and Merlin were all count firsts. More northwest winds on 16 AUG had birds flying, but with fewer warblers and more finches. Only around 400 warblers were counted, but the season high of 282 American Goldfinches, 2 Purple Finches, a very early Pine Siskin, and the season's first Double-crested Cormorant were highlights. A diverse flight of 26 species took place on 17 SEP despite light southeast winds. Highlights included the first Philadelphia Vireo and Tree Swallows of the season, as well as the season high count of 3 Northern Parulas.

Strong westerly winds the next two days did not generate much of a flight; the season's first Yellow-bellied Sapsucker was seen on 18 SEP and the season's

first Nashville Warbler was seen on 19 SEP. The winds switched to the northwest on 20 SEP and brought with them a 34 species morning and one of the best raptor flights of the season. Counts of 169 Broad-winged Hawks, 19 Red-breasted Nuthatches, 7 Bay-breasted Warblers, and 20 Black-throated Green Warblers were all their species' highest counts for the season. The northwest winds continued into the next day and the 35 species, including 13 species of warbler, was the highest species morning of the season. Some later season migrants that put in their first appearances of the season were Northern Flicker, Red-bellied Woodpecker, Blue Jay, and Palm Warbler. Rain moved into the area the next two days and really slowed down migration despite the winds remaining favorable. Two season firsts occurred with Blue-headed Vireo on 22 SEP and Turkey Vulture on 23 SEP; the season's second siskin on 23 SEP was also notable.

After a cold front passed, a notable flight took place on 24 SEP highlighted by the first American Pipit of the fall and the only Yellow-billed Cuckoo of the season. The next day had minimal flight due to rainy conditions and strong southwest winds. The first triple-digit Blue Jay day along with the first Eastern Bluebird and last hummingbird of the season were recorded on 26 SEP. The winds shifted out of the south on 27 SEP and brought several highlights with them including the season high count of 10 Bald Eagles, 2 Red-headed Woodpeckers, and the only Prairie Warbler of the count. Blackpoll Warblers became the dominant warbler for the count with 12 being tallied that day. A count of 196 Blue Jays recorded the only species moving in numbers during a foggy morning on 28 SEP. Light northwest winds the next day would produce the season high of 216 Blue Jays. White-breasted Nuthatches continued to move and began to outnumber Red-breasted Nuthatches. The final day of the month had an unremarkable flight on light northeast winds, but an adult Peregrine Falcon cruised by the platform as a final September highlight.

October

The count tallied 15,882 individuals of 66 species during October. The first two days of the count were rained out by the remnants of Hurricane Ian. Light northeast winds on 3 OCT produced a very diverse flight with 29 species; it was also the last day of triple-digit Blue Jay numbers with 168 counted. The 7 Red-bellied Woodpeckers on 3 OCT were the highest count for the season. The first notable movement of American Robins occurred on 4 OCT, just the tip of the iceberg for what would come later in the season. The next few days had strong west or northwest birds and for the first time all season, the majority of the birds were actually seen moving north up the ridge. The first migrating Downy Woodpecker of the season flew by on 6 OCT along with a notable movement of 6 White-breasted Nuthatches. Strong northwest winds on 8 OCT and strong southwest winds on 9 OCT both failed to produce much of a flight.

With the first Golden-crowned Kinglet of the season on 10 OCT, it really began to feel like the later season migrants had arrived at Dans Rock. Cedar Waxwings once again became a dominant species on the count with 54 of the 106 individuals that day being this species. South winds on 11–13 OCT made for very slow days. The main migrants at this point were waxwings, robins, both nuthatch species, and Blackpoll and Yellow-rumped Warblers. The first migrant Hairy Woodpecker for the count went down the ridge on 13 OCT. Two more days of light southwesterly winds on 14 OCT and 15 OCT made for more slow counts, but a late Nashville Warbler on 15 OCT was notable.

The south winds finally stopped on 16 OCT and birds appeared ready to move. The streak of twelve consecutive days with fewer than 200 individuals finally broke on moderate west winds. A total of 16 Sharp-shinned Hawks and 37 Rock Pigeons were the season high counts for those species and White-breasted Nuthatches had their first double-digit day with 10 counted. The good numbers continued on 17 OCT as the winds remained out of the west. Robins had their first big day with 305 counted. The winds shifted to the southwest on 18 OCT and remained that way for the next day for two more slow mornings. The first snow of the season on 19 OCT did move some birds around, including the season's first Red Crossbills and a count of 15 Turkey Vultures, the first noteworthy movement documented for that species.

The final third of the month had some very good days, starting with the first large flock of Red-winged Blackbirds on 20 OCT. The flock of 400 Red-wingeds was the largest single flock of any species so far this season, but would pale in comparison with some of the flocks that would pass later in the month. Northwest winds on 21 OCT brought the season high count of 14 Ruby-crowned Kinglets as well as good numbers of White-breasted and Red-breasted Nuthatches. The northwest winds continued into 22 OCT, when 16 White-breasted Nuthatches were the season's highest count and part of a noteworthy season for the species. The 2,000 individual mark was eclipsed for the first time on 23 OCT on the third straight day of northwest winds. Cedar Waxwings, American Robins, and 1,002 Red-winged Blackbirds made up the vast majority of the flight with almost all the birds passing within the first 30 minutes after sunrise. One of the best days of the season was 24 OCT, which featured continued northwest winds. A major push of birds came through right after sunrise with 826 Cedar Waxwings, 790 American Robins, and 1,049 Red-winged Blackbirds leading the way. Other highlights included the first migrating Black-capped Chickadees of the season, and the season's high count of 96 Purple Finches. A diverse flight on 25 OCT included the season's first Rusty Blackbird, 19 Double-crested Cormorants, 2 Hairy Woodpeckers, and 69 Yellow-rumped Warblers. Fog and southeast winds on 26 OCT ended the stretch of good flights. The next four days had northerly winds which produced solid flights every morning with American Robins making up the bulk of the count.

The first migrating American Crows were recorded on 28 OCT and the season's first Fox Sparrow arrived on 29 OCT, Black-capped Chickadees were noted most mornings, and American Pipits were recorded in solid numbers. Surprisingly the only ducks of the season were a distant group on 28 OCT, but unfortunately, they remained too distant to be identified. Southeast winds and rainy conditions made for a slow flight on 31 OCT.

November

The count tallied 26,655 individuals of 45 species during November, making it the month with the lowest species diversity but the highest individual tally. November was a month of two very different halves. The first half of the month had by far the biggest flights number-wise of the season, while the second half of the month had some very slow days accompanied with low diversity. The count broke the 3,000 individual mark on 1 NOV with 5,088 individuals tallied. Conditions were not great with moderate west winds and lots of rain in the area. One band of particularly heavy rain halted the count for almost half an hour around mid-morning. The 1,153 Cedar Waxwings and 3,652 American Robins made up the bulk of the flight. Just this single day had more individuals than the entire month of August. The big flight continued with northwest winds on 2 NOV with the season high of 5,171 individuals. Once again waxwings and robins dominated, but the 2,548 Red-winged Blackbirds and 778 Common Grackles were the season's highest counts for each. American Robin became the first species to surpass 10,000 individuals for the season. The main highlight of 2 NOV was the first Evening Grosbeak of the season, a highly anticipated species here with the ongoing irruption across the Mid-Atlantic this fall. A flight of 4,449 individuals on 3 NOV marked the last big movement of the fall; notable high counts included 1,415 Cedar Waxwings, 42 Eastern Bluebirds, and 10 Black-capped Chickadees. The waxwing count is the seventh highest count for the species in the Trektellen database (Trektellen 2022b). The first Golden Eagle of the season was also recorded late in the morning.

The next week of the count (4–10 NOV) averaged around 1,000 individuals per morning, but it appeared that the large numbers of birds the last few days were the final big push of migrants in western Maryland. The winds were a mixed bag with an even number of days of north and south winds, the only really slow day in this stretch came on 6 NOV when there were very strong southwest winds all morning. Robins and waxwings continued to be by far the two most numerous species, with Cedar Waxwing becoming the second species to reach 10,000 individuals on 5 NOV. One of the highlights of the season also appeared on 5 NOV when an early Rough-legged Hawk came down the ridge. Red-tailed Hawks became the default raptor during this period with a total of 24 during November. A Winter Wren on 6 NOV was the only one for the season and also the 100th species for the count. The finch numbers continued to be steady, mainly due to Purple Finches that were recorded in double digits most days this

week. The lone southbound Red Crossbill of the month went by on 8 NOV and Evening Grosbeaks were detected on 8 NOV, 10 NOV, and 12 NOV.

The remnants of Tropical Storm Nicole rained out the count on 11 NOV. From this point forward, numbers of individuals and species diminished for the remainder of the season. The last warbler of the year, a Yellow-rumped, was detected on 12 NOV. Light northeast winds on both 14 NOV and 15 NOV did not move many birds, but Golden Eagles on both days were highlights. The first winter storm of the season moved through the area the afternoon of 15 NOV and the next few days showed an uptick in numbers, likely in response to the adverse conditions that had taken hold of the region. The main species on the move were European Starlings: 4,268 were recorded during November with a high count of 1,659 on 18 NOV. Turkey Vultures also seemed ready to move after the snow and ice storm with 9 counted the morning after the storm. A family group of Tundra Swans was seen heading toward the Chesapeake Bay on 16 NOV, the only time they would be recorded here this season.

From 19 NOV until the end of the month, double-digit species totals would only be achieved twice. The only four species reliable each day during this stretch were Cedar Waxwing, American Robin, European Starling, and American Goldfinch. Most days during this final stretch had light southerly winds, but even the days with stronger north and west winds did not produce an increase in numbers. Some of the highlights during the final week and a half were a Red-shouldered Hawk on 19 NOV, the last Pine Siskin of the season on 21 NOV, and the 4 Black Vultures on 22 NOV, which become the 103rd and final new species for the count season. Golden Eagles were recorded on seven days during the month. The weather on the final day of the count was intense, with heavy rain and then dense fog making for challenging counting conditions. A hardy flock of 7 starlings were the only migrants recorded on the final day.

Species Accounts - The Season's Notable Five

Cedar Waxwing

Cedar Waxwings are a nomadic species with a poorly understood and disjointed migration pattern (Witmer et al. 2020). Waxwings were a mainstay at Dans Rock as they were the only species with over 1,000 individuals in each count month, the species with the second highest individual count on the season, and the species detected on the most count days. There was a peak in numbers during the month of August where waxwings were the dominant migratory species at Dans Rock. In much of September and October waxwings were recorded on most days, but rarely in large numbers. A major push came through along with the main robin surge during the three-week period around the beginning of November. The first Cedar Waxwings were counted on 1 AUG and the last were noted on 28 NOV. The peak flight for the species occurred on 3

NOV when 1,415 were tallied (Figure 2). Monthly totals were 1,993 in August, 1,280 in September, 3,163 in October, and 6,205 in November with a season total of 12,641. Waxwings were present on 104 of the 121 days of monitoring.

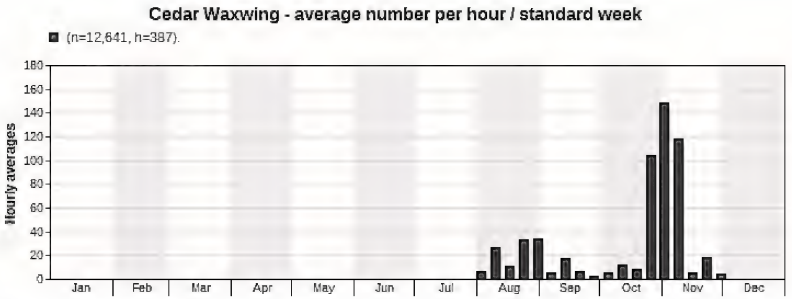

Figure 2. Timing of Cedar Waxwing movement in 2022 at Dans Rock, Allegany County, Maryland.

American Robin

American Robins are a late season migrant that can often be seen moving in large, loose flocks at dawn and dusk all across the Mid-Atlantic. Robins earned the distinction of having the highest individual count for any species this season. Large numbers streamed by the count site around the end of October and early November, with the majority of the day's birds passing by within the first half hour after sunrise. American Robin would have been one of the few species that would have continued moving in decent numbers after the count concluded. The first American Robins were counted on 2 AUG and the last were counted on 29 NOV. The peak flight occurred on 1 NOV when 3,652 were counted (Figure 3). Monthly totals were 39 in August, 48 in September, 5,825 in October, and 11,158 in November with a season total of 17,070. American Robins were present on 78 of the 121 days of monitoring.

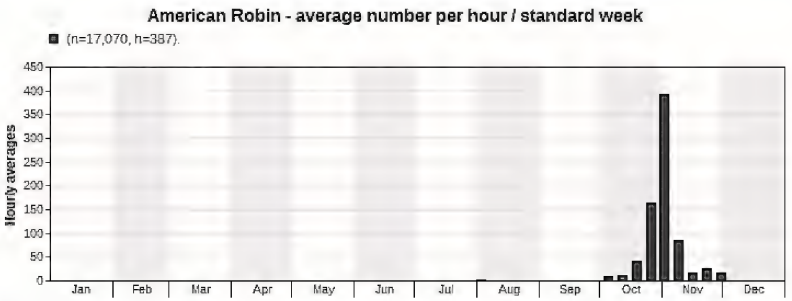

Figure 3. Timing of American Robin movement in 2022 at Dans Rock, Allegany County, Maryland.

Cape May Warbler

The fall of 2022 was an exceptional season for Cape May Warblers across the Mid-Atlantic. Cape May Warbler populations are linked to the severity of Eastern Spruce Budworm, *Archips fumiferana* Clemens (Lepidoptera: Tortricidae), outbreaks on their breeding grounds in the boreal forest. The budworms provide an abundance of food during outbreaks which lead to increases in population productivity and higher numbers of these budworm-linked species (Venier and Holmes 2010). The last few summers have seen widespread budworm outbreaks across the breeding range (Germain et al. 2021, Maine Forest Service 2021) for Cape May Warblers and as a result higher than normal numbers have been observed across the region during fall migration. At Dans Rock, Cape May Warblers arrived in good numbers unseasonably early in August, continued in excellent numbers through most of September, and were gone after the first week of October. The first Cape May Warbler was noted at Dans Rock on 12 AUG and the last came through on 12 OCT. The peak flight of the season occurred on 1 SEP when 276, a new Maryland high count, were tallied in a morning (Figure 4). Monthly totals were 229 in August, 891 in September, 18 in October, and zero in November, making for a season total of 1,138. Cape May Warblers were present for 45 of the 121 days of monitoring.

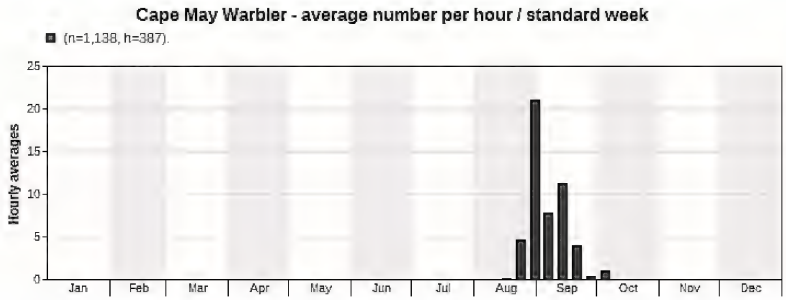

Figure 4. Timing of Cape May Warbler movement in 2022 at Dans Rock, Allegany County, Maryland.

Black-throated Green Warbler

Black-throated Green Warblers were the third most abundant warbler at Dans Rock this fall, beaten out by an exceptional Cape May Warbler flight and the morning flight staple Yellow-rumped Warbler. Despite not having any huge flights, Black-throated Greens had a strong year at Dans Rock. Interestingly, despite documenting fewer overall migrants than the morning flight counts at Cape May and Turkey Point, Dans Rock recorded far more Black-throated Green Warblers than either site (Trektellen 2022a, Irons 2023b). This speaks to the value of having an inland morning flight count to document the different migratory corridors that closely related species are taking through the region. The first Black-throated Green Warbler of the season was noted on 2 AUG and the last moved through on 14 OCT. The peak flight for the species occurred on

20 SEP when 20 were counted (Figure 5). Monthly totals were 79 in August, 192 in September, 10 in October, and none in November with a season total of 281. Black-throated Green Warblers were present on 55 of the 121 days of monitoring.

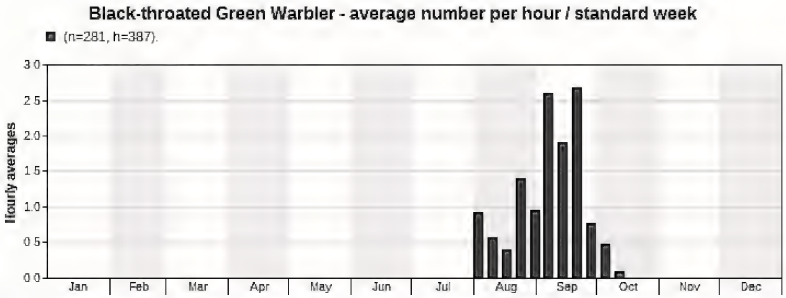

Figure 5. Timing of Black-throated Green Warbler movement in 2022 at Dans Rock, Allegany County, Maryland.

Purple Finch

Well-known as an irruptive species, Purple Finches are recorded in dramatically different numbers year-to-year in Maryland and around the Mid-Atlantic. This fall was productive for documenting irruptive species, and Purple Finch was perhaps the most obvious example at Dans Rock. On days with northerly winds, the distinctive flight call for this species could be heard every few minutes as small groups passed down the ridge. An exceptionally early individual in August was a sign of things to come, but the bulk of birds came through during a stretch of conducive winds around the end of October. The first Purple Finch was detected on 11 AUG and the last was noted on 26 NOV. The peak flight occurred on 24 OCT when 96 were tallied in a morning (Figure 6). Monthly totals were 1 in August, 14 in September, 219 in October, and 113 in November, making for a season total of 347. Purple Finches were present on 35 of the 121 days of monitoring.

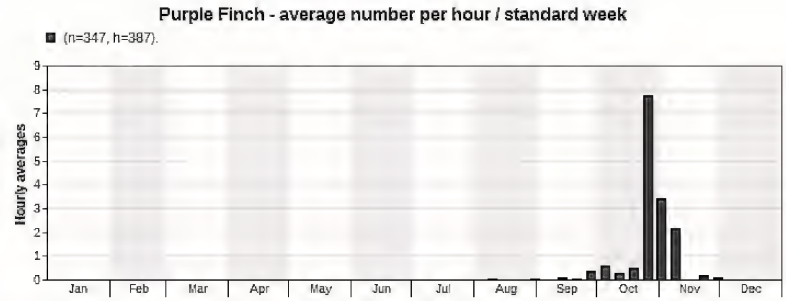

Figure 6. Timing of Purple Finch movement in 2022 at Dans Rock, Allegany County, Maryland.

The count data are publicly available via Trektellen at the MD Biodiversity Project - Dans Rock morning flight page (Trektellen 2022b), eBird (2022), and Avian Knowledge Network (2022). Highlights and photos of the 2022 morning flight count can be found at the MBP special project page (Maryland Biodiversity Project 2022a) and MBP blog (Maryland Biodiversity Project 2022b).

DISCUSSION

There were many questions coming into this inaugural season that people were keen to have answered. Perhaps the biggest question was would Dans Rock get morning flight or any sort of consistent passerine migration? Unlike the morning flight counts at Cape May and Turkey Point, the Ridge and Valley region does not have any coastline or other large migration barriers to disrupt migration and funnel migrants. Dans Rock was ultimately selected as a count site due to its location on the Allegheny Front, a known raptor migration corridor, and the easily accessible vista for observation. After a season at Dans Rock, it is apparent that quality morning flight does occur here, but it lacks the consistent day-to-day numbers that coastal locations can achieve.

Just like any other aspect of migration monitoring, weather played an important role in how morning flight unfolded at this location. Nearly all of the most productive flights occurred on days with light winds out of the north or northwest. Strong winds seemed to keep smaller passerines from moving along the top of the ridge where they would have been visible from the platforms and likely meant that any movement in the area would have been occurring down in the valleys. Northerly winds provided a nice tailwind that seemed to encourage passerines to continue migrating beyond sunrise before dropping in to find a suitable area to forage for the day. All of the big warbler flights in September occurred on mornings with light, northerly winds. Winds from the south seemed to impact Dans Rock far more than other morning flight sites (Irons 2023a, Irons 2023b) in Maryland. Mornings with southerly winds were for the most part very unproductive, even if other weather conditions seemed conducive for migration. Once again, my best explanation for this is Dans Rock being positioned at the top of the ridgeline. Any birds moving that day would likely be more inclined to migrate down in the valley or off the eastern edge of the ridge where they would have to battle less of a headwind. One final weather factor that impacted the count was cloud cover. Mornings with clear skies tended to have fewer birds detected as they were able to pass by hundreds of meters above the ridgeline where they were out of earshot or undetectable against the blue sky. There were several occurrences where birds, particularly Bobolinks and finches, could be heard calling clearly as they passed directly overhead, but were invisible in the sky. Silent birds or ones with fainter flight calls would have gone completely undetected. Overcast days seemed to keep birds lower and made them much more detectable with some sort of backdrop in the sky.

The issue of not having geographic features to concentrate birds here was two-fold. Even the birds that did choose to migrate down the ridgeline were not forced to come close to the platforms. Passerines moved down the ridge in wide, loose waves and preferred flight paths changed daily. Often the majority of birds would be moving pretty distantly from the platforms, either over the plateau to the west or down below in the valley to the east. This was especially problematic for warblers as hearing them call or seeing diagnostic plumage details was necessary for identification. As a result, many of the warblers seen from Dans Rock had to be entered as "warbler sp." in Trektellen. Issues with identifying passerines moving over the valley were compounded due to the sunrise occurring directly behind this flight line. Many passerines were simply too distant or too backlit to be identified from this location.

Different groups of birds were noted to have different and distinct flight paths at Dans Rock (Figure 7). The days with huge warbler flights saw most of the birds flying along the edge of the ridge to the east and below the overlook. At a site with primarily westerly winds, perhaps the smaller passerines liked moving out of the winds. Or perhaps this was the only geographic feature that concentrated passerines, birds moving over the plateau or cutting across the ridge were just too spread out for any sort of flight path to develop. Blue Jays and the majority of Monarch butterflies were seen using this same path as well. The huge blackbird, robin, and waxwing flocks that migrated through in late October and early November took a very different route. These birds were primarily observed through a spotting scope streaming over the plateau to the west of the platform. Raptors typically took one of two main flight paths depending on the time of day. Early in the morning before thermals developed, raptors would primarily cruise directly down the ridgetop on either side of the platform. Typically, it would be *Accipiter*s and falcons moving in the first hours after sunrise, but occasionally a *Buteo* or Golden Eagle would be seen doing this. Later in the morning, most raptors would first be seen rising up into view off to the northwest of Dans Rock out towards Frostburg. After gaining altitude the raptors would glide along over the plateau to the west of the platform. A probable explanation for this occurring is that the predominant westerly winds would hit the back edge of Dans Mountain and create updrafts that larger soaring raptors such as *Buteo*s, eagles, and vultures would utilize.

The contiguous tracts of mature forest that made up the ridgeline did seem to be a corridor that passerines would use in a sort of passive migration throughout the morning. Many passerines were noted moving purposefully south down the ridge in a series of several short flights until out of view. This was especially evident with Black-capped Chickadees, which seemed to prefer this method of migration over the long, sustained flights used by long-distance migrants. Mixed feeding flocks were also seen most days in September and October using the ridgetop as a land-based migration route during the day. Flocks would often

move through the trees right next to the platform as birds foraged their way south down the ridge early in the mornings. These flocks would have unique compositions that I would not encounter during the remainder of the morning or on subsequent days, which leads me to believe they were active migrants.

Figure 7. The primary flight paths of different species assemblages at Dans Rock, Allegany County, Maryland. The blue arrow shows the primary warbler flight path along the eastern side of the ridge below the overlook platform. The green arrow shows the primary late season flight path taken by robins, waxwings, and blackbirds. The yellow arrows show where raptors usually circled up into view and then moved down the ridge from that point.

We were fortunate to have the inaugural year for the count occur during a great fall for several irruptive species in the Mid-Atlantic. As mentioned in the species accounts, this fall was another banner year for Spruce Budworm-linked warbler species such as Cape May, Tennessee, and Blackpoll Warblers. The Dans Rock count detected early season movements for all of these species and it will be interesting to see how numbers for these species change during non-outbreak years. It was apparent early in the fall that it would be a good finch flight with early Purple Finches, early Pine Siskins, and huge American Goldfinch flights as indicators. The finch flight would continue all season with Red Crossbills being detected on two days and Evening Grosbeaks on four days. Many of our finch counts and numbers mirrored the predictions made in the 2022 winter finch forecast (Hoar 2022), especially for siskin, Evening Grosbeak, and Purple Finch. Red-breasted Nuthatches were also forecasted (Hoar 2022) to have a big flight and our count backed that up. These tiny nuthatches were moving through in good numbers from mid-August until late October. Perhaps the most interesting observation we documented at Dans Rock were good flights of species that are typically viewed as resident species and undergo irregular

irruptive movements rather than annual migrations. At Dans Rock those species were Black-capped Chickadee and White-breasted Nuthatch (Dunn et al. 2022). During the month of October, White-breasted Nuthatch became the dominant nuthatch species; 126 were counted here in the season. Black-capped Chickadees were more difficult to count as they were less inclined to engage in long, sustained flight while migrating. The season tally of 37 should probably be higher, but some migrating birds seen at the count were likely disregarded as locals. Red-bellied Woodpeckers were also recorded in good numbers, but the count here pales in comparison to the record-breaking totals at Turkey Point this season (Irons 2022a).

Having a full season count at Dans Rock deepens our understanding of bird migration across the Mid-Atlantic. With counts running concurrently at a coastal site in Cape May, a coastal plain location at Turkey Point, and an Appalachian site at Dans Rock we were able to see how different species move across the span of this region. It has already been interesting to compare flight composition at the three sites and will be even more informative as the dataset for the MBP counts continues to grow.

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MARYLAND BIRDLIFE

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Contributors should prepare manuscripts according to the following instructions.

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Abstract: An abstract is required for all long articles; suggested for all biologic studies more than two (2) pages in length; but is not needed for notes, distribution reports, or short observations (especially if two pages or shorter in length). The abstract should provide a capsule description of the main thrust, methods, and essential findings of the article. It should contain the scientific name of the main subject species.

Text: Manuscripts should be double-spaced, lines numbered, and submitted in MS Word™ by e-mail. Please identify respective file name(s) for text, figure titles, and descriptions of graphs or figures. First mention of a biological organism, in the abstract and text should include the full scientific name in italics. Carefully check the spelling of all scientific names. Capitalize the first letter of each word comprising the "official" common name for faunal species. Short articles and general notes (20 pages or less) are preferred. Camera-ready, color illustrations, pictures, or digital images are preferred.

References: References should be given in an author-date format: (Robbins 1987); (Robbins 1987, 1988); (Robbins, in press); (Robbins, in litt.); (Robbins, pers. comm.); (Robbins and Robbins 1987); and (Robbins et al. 1987) for three or more authors. Provide evidence of acceptance for works "in press," or cite as "unpublished", "in litt." (written), or "pers. comm." (verbal), written permission is suggested as well. Citations shall be listed alphabetically, under LITERATURE CITED, as in the following examples: **Articles**: Robbins, C.S. 1965. New breeding bird survey tested in Maryland this summer. *Maryland Birdlife* 21(2):48–49. Do not abbreviate the titles of journals. **Books**: Ellison, W.G. (Editor). 2010. *2nd Atlas of the Breeding Birds of Maryland and the District of Columbia*. The Johns Hopkins University Press, Baltimore, MD. 494 pp. **Internet**: Ritchison, G., F.R. Gehlbach, P. Pyle, and M.A. Patten. 2020. Eastern Screech-Owl (*Megascops asio*), version 1.0 (text last updated 7 March 2017). In Birds of the World (P.G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Available at: https://doi.org/10.2173/bow.easowl1.01. Accessed 23 October 2021.

Tables: Tables, graphs, and line drawings should be created electronically in black and white. Color should only be used when absolutely necessary for clarity.

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